

FLIGHT

&
The AIRCRAFT
ENGINEER.

First Aero Weekly in the World.
Founder and Editor: STANLEY SPOONER.

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EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."—
(Sir Auckland Geddes, Minister of National Service.)



WHILE we have never been particularly intrigued as to whether the uniforms for the Royal Air Force incline to this hue or to that tint, and as to whether a button is placed here or there, holding that such matters are best left to experts on the subject, of whom, perchance, there would appear to be a greater number than are to be found expert concerning a great many matters of much more vital, because engineering, interest to the newly created Service, we have been always of opinion that the fundamental test of any uniform for service is that it should be designed primarily, not to making a pretty appearance on parade, but to being a practical proposition from the point of view of those who have to wear it when and where there is work to be done. That is one of the matters wherein the French are second to none, as instance their infantry uniform, at which many in these islands were wont to smile almost patronisingly before the war, whereas to-day it is realised the world over that no uniform enables

an infantryman to do an infantryman's work more effectively and more conveniently than that worn by the immortal *Poilu*. Such being our views, the matter of detail in the R.A.F. uniform scheme has not come under serious editorial review hitherto; nor did we expect it would do so at any time. Now these new uniforms are beginning to be used, however, a practical point emerges. We should imagine it has merely to be brought to the notice of the authorities for steps to be taken to remedy what is, in fact, an awkward situation, in which not merely the R.A.F., but all units of His Majesty's Services are placed by reason at once of the similarity and of the relative absence of dissimilarity between a Junior Officer's and a Warrant Officer's uniform in the newly constituted and now entirely independent Third Arm.

Ever since we have had a Navy and an Army the nation has realised that the non-commissioned officers are the very backbone of those Services. Experience in this war has merely confirmed that fact. Now that a third entirely independent but co-operating arm has been added to the Senior Services by reason of man's conquest of the air and of the ever-present miracle of aerial warfare, and that the outward and visible sign of the birth of the Third Arm is being given by the wearing of the new style uniforms, a not inconsiderable number of warrant officers of the R.A.F. are experiencing embarrassment; also non-commissioned officers and men not of that Force but of other forces, besides, are being still further embarrassed and worried by reason of the difficulty of distinguishing at a distance of more than three paces, say, between a junior commissioned officer and a warrant officer of the new Service. This Service has been constituted to a large extent by compromising between naval and military practice. Thus, in the Navy a warrant officer is saluted, whereas in the Army he is not. In the R.A.F. also a warrant officer is not entitled to a salute. Indeed, for him to acknowledge one is a "crime." That word is used by the military in sundry senses that to the civilian mind appear, shall we say, a thought Gilbertian? Be that as may be, thus difficulties arise.

In the R.A.F. a commissioned officer and a warrant officer wear, in effect, the same uniform. There is a difference in the texture of the material of which each is fashioned, but the degree is so slight as scarcely to be recognisable at a distance of three yards. Further, both classes of officers wear the same cap and the

same cap badge; but a commissioned officer wears the albatross on his forearm, whereas a warrant officer wears it at the top of the arm, just below the shoulder. The position of the bird, however, is such that it cannot always be espied on approaching the wearer face to face, because in both cases the bird is placed at the side, not in front, as the arm is carried normally in walking. The commissioned officer has a vertical bar or bars on his cap, whereas the warrant officer has none. Against this, however, a second lieutenant, R.A.F., wears no rings on his sleeves, neither does a warrant officer. Actually, to meet either class of officer in the street, therefore, is not to find it easy on all occasions to distinguish between a junior commissioned officer of the R.A.F. and a warrant officer. The matter is not one of opinion. "Ask the man who wears uniform." Not a few instances have come under notice in which warrant officers have doffed their new uniforms after an hour's wearing them, and have gone back to using their old ones on any and every possible occasion. The reason is that they are quite human, therefore they loathe to appear rude; nor do they wish to get other men into trouble. When an officer walks along the streets nowadays, whether he is in the Navy, the Army, or the R.A.F., it is the wish, particularly of every eager young soldier, to salute him. Consequently warrant officers of the R.A.F. when wearing the new uniform find themselves being saluted by infantrymen by reason of the individual's keenness to acknowledge the uniform. Instance, for example, a young soldier out during leave with his best girl, or with his parents, naturally proud to show them what a smart salute he can give as he passes an officer. Picture, further, what an utter fool he feels when, suddenly, he discovers that the man he has saluted either passes him by without the slightest sign, or tries to lessen, or emphasise, the apparent snub by turning his head deliberately in the opposite direction. A warrant officer in the R.A.F. saluted in the circumstances in question is not allowed by the regulations to take the salute. How are members of the Services to know how to behave? Assuredly it is unreasonable to expect that an A.B. encountering a warrant officer, R.A.F., even if he recognises him as such instead of taking him for a junior commissioned officer, should know that the warrant officer is not to be saluted because he is in the R.A.F. Equally, how is a private, or a trooper, to recognise on the instant that a warrant officer in clothes of a cut and apparent quality akin to that of a junior officer of the R.A.F. is, instead, a warrant officer who, in that particular service, must not be saluted? We are confident that inquiry on the part of the authorities concerned would reveal that, on account of this too pronounced similarity of uniform, warrant officers of the R.A.F. are constantly mistaken for and saluted as commissioned officers, save only by men of the R.A.F., who, incidentally, have themselves not been immune from making mistakes. Obviously, rather than risk not saluting an officer, a man will make assurance doubly sure and salute whenever in doubt. Yet to salute one who does not hold His Majesty's Commission in the new Service is itself classified as a "crime." It goes without saying that when a man gives a salute and it is not acknowledged, he feels not merely a fool, he also wonders what he is to be at next to give satisfaction to the authorities, particularly in face of the periodical clamour that

discipline must be stiffened so that even when on leave in crowded thoroughfares his arm must be flying up and down all the time—semaphore style—according to the number of officers he passes.

In these circumstances it is open to the authorities to remedy the matter in one of two ways. Thus, if the existing scheme is to be retained, steps should be taken forthwith to notify naval and military units concerning precisely how they are to distinguish between a commissioned officer and a warrant officer of that new Force; and, further, as to precisely how the two classes of officers are to be treated, since their treatment is not the same as in the Navy, as afore-mentioned. The alternative is the retention of the old R.N.A.S. and the Navy practice of saluting warrant officers. Owing to the varied nature of the work of the R.A.F., of course, in a large number of cities and towns in these islands warrant officers of the R.A.F. are stationed. In such centres units of the various Forces are constantly passing to and fro. The number of salutes warrant officers of the R.A.F. are receiving in such circumstances, and are having to ignore to their personal discomfort, also to that of the men who salute them, is the sole cause of our respectfully, but earnestly, ventilating this matter, that it may be dealt with intelligently and promptly by Headquarters.

The State Menace to Industry.

Wherever we turn the menace of State control of industrial enterprise is to be encountered. First one industry and then another falls within the grip of the octopus of the modern bureaucracy, under the excuse of emergency due to the state of war, while the whole of the available evidence points to the fact that the action of the Departments is not so much a war measure as one designed to perpetuate the control of the State after the war has ceased to exist. We have on more than one occasion sounded a note of warning as to the insidious move that is being made towards the complete nationalisation of the aircraft industry. Not only is the industry itself falling into the hands of the Government, but the latter appears to be making quite sure of its plans by extending its "control" to certain of the related industries upon which the aircraft manufacturer depends for his raw materials. For example, there is the case of the timber trade. Recently the Timber Controller notified everyone concerned that for the future all supplies of timber coming into the country would be taken over and issued through his Department. This means that firms who have been in the trade for years, and who have invested their capital in it, are now to all intents and purposes driven out of business. Taking that side of the trade which mostly concerns us, it means that for the future aircraft manufacturers will only be able to obtain their necessary supplies of timber from the Government. They will buy at the price fixed by the Government and in just what quantities it pleases the Timber Controller's Department to fix. The whole healthy element of trading competition at once disappears. As a war measure, this may be really necessary. We do not say it is not, though it is at least open to argument. But it seems to us that the grave danger lies in the extreme likelihood that, unless industries combine to free themselves from the trammels of Government control as soon as the necessity for it has ceased, this "control" will

eventuate in State purchase under compulsion of these industries which the aforesaid control will have robbed of their value. That this fear is not one conjured up by the imagination is made amply clear by the Report of the Select Committee of the House of Commons on "Gas Undertakings (Statutory Prices)." One of the recommendations of the Committee is that:—

"In the case of any company operating under the sliding scale or the maximum price systems whose dividend on its Ordinary stock or shares has been reduced to one-half of the standard or maximum rate or to one-half of its average dividend calculated on the three financial years immediately preceding the war (whichever may be the smaller) the sliding scale or maximum price shall cease to operate, and the company shall be entitled to charge such a price for gas as will enable the company to pay a dividend on its Ordinary stock or shares at the rate of one-half the standard dividend or one one-half the pre-war dividend . . . whichever may be the smaller."

Now, many of the larger gas undertakings have a standard dividend of 4 per cent., while very few pay a higher rate than 5 per cent. Therefore, this Select Committee has deliberately placed it on record that in its opinion a sufficient return to investors is represented by 2 per cent. ! What does it mean ? Does it convey that this is to be the basis of State or municipal purchase ? Or is it intended to mean that in the opinion of the Committee 2 per cent. is a fully sufficient return on capital invested in industrial enterprises ? For our own part, we incline to the opinion that in the former is to be found the explanation of the recommendation, and we go even farther in believing that it is simply a part of a huge plan for the permanent control, through State ownership, of our staple industries. We have only to look around at the industries that have passed into Government control for evidence of the intention. Shipping, railways, ship-building, the iron and steel trades, the liquor trade, and a dozen others are shackled hand and foot by State control, and it is freely said that now the Government has once got its hands on certain of these they will never again revert to private ownership. And the more the Government controls, the more its appetite seems to grow for further industries to administer. Industrial enterprise will do well to be up and organising for the war against bureaucracy which will indubitably follow the defeat of the Hun.

The London Strike.

It is difficult to write with patience on the subject of the totally unwarranted strike of aircraft workers in London factories. It appears that the management of the Alliance Works dismissed one of their workmen for calling a workers' meeting during working hours, and on the day following the dismissal, work was stopped at the factory. The Ministry of Munitions agreed with the London Aircraft Committee that work should be resumed on the following morning on the understanding that an arbitration should take place immediately upon the resumption. This agreement was repudiated by an unofficial committee of the workmen, and work was not resumed. On Friday last when an extension of the strike was threatened, members of the London Aircraft Committee visited many of the factories and advised the men to remain at work. In some cases the appeal was successful, but in others it was disregarded, and by Saturday over 10,000 men from 25 factories, it is stated, were on strike. The Min-

istry of Munitions made every effort to settle the original dispute by arbitration, and not until the men actually ceased work did it resort to anything in the nature of a threat. On Saturday, however, the Ministry officially stated that unless there was an immediate resumption of work, pending a settlement of the dispute by constitutional methods, it would have no alternative but to "consider taking action against those concerned."

It does not seem to us that the Ministry of Munitions comes particularly well out of the affair. The time to have put down its foot was before these precious worthies who are willing to jeopardise the fate of the war and the Empire for a mere vexatious pretext ceased work at all, and not to have waited for them to come out on strike. So far as concerns the first cause of the strike, it seems to us that never was a cessation of work in a vital industry less justified by the facts leading up to it. Here is a case of a man being dismissed for a gross breach of works' discipline involving, had the meeting he called been held, a serious loss of time on work of the utmost importance. The time for holding such a meeting was, obviously, *after* working hours. It is to be doubted if the most out-and-out advocate of the rights of the worker—outside the ranks of these beautiful patriots—would be prepared to justify the waste of time in holding "workers' meetings" during working hours at a time like the present. Yet 10,000 well-paid—overpaid—sleek pets of the Ministry of Munitions make such an incident as this the pretext for ceasing work, holding up production of machines that they know as well as anybody are vital to our hopes of victory. And the Ministry, which is prompt to act when the workers demand another war bonus and is never backward in putting the screw on the employer, is not even annoyed until after the disaster has been consummated. But if the Ministry has shown itself to be weak, what are we to say of these 10,000 super-patriots who put their tin-pot "principles" before the nation's need ? Really words fail us to express the utter disgust that fills us at the spectacle of 10,000 able-bodied workers walking the streets in defence of so paltry a cause as that which led up to the strike. And the worst of it is that a very large number of them are young men, well inside military age, who have been able to escape the dangers and discomforts of the trenches in order that they may devote their time and their efforts to producing essential aircraft for the discomfiture of the enemy.

While it is impossible not to agree that it is essential that our war industries should be carried on equally with the supply of men for the fighting services, we still think that a strong administration should take the one step which seems to us to be the only one under the circumstances, and at once draft into the army sufficient of the malcontents to serve as a useful object-lesson to the others. Heaven knows we are no admirers of German methods of holding down unrest in the munitions industries, but at least it must be admitted that there are some things in which we might well take a leaf out of the enemy's book. Does any sane observer think that in Germany the spectacle could be seen of 10,000 aircraft workers skulking about the streets out of mere caprice, which is all this precious strike amounts to ?

We think not, and that it should be seen here is something worse than deplorable.

HONOURS

Honours for the R.A.F.

It was announced in a supplement to the *London Gazette* on July 2nd that the King has been pleased to confer the following rewards for gallantry and distinguished service:—

Distinguished Flying Cross.

Lieut. (Hon. Capt.) E. J. P. Burling, Lieut. (T. Capt. H. E. Fletcher, Lieut. (Hon. Capt.) E. M. King, Lieut. (Hon. Capt.) H. de V. Leigh, Lieut. (Hon. Capt.) V. Millard, Sec. Lieut. E. Robinson, Lieut. E. A. B. Wimbush.

Air Force Cross.

Lieut. C. K. C. Dagg, Lieut. A. V. McKiever, Lieut. M. C. Mossop.

Meritorious Service Medal.

For services rendered in a theatre of war:—
F/142 P.O. (R.H.) J. W. Baglee (Drayton Park, N.), Z/116 Sergt. A. E. Swain (Banbury).

For meritorious service and devotion to duty on the occasion of an outbreak of fire in a Government establishment:—

No. 9546 Corpl. M. J. Horne, Australian Flying Corps, No. 92534 1st Air-Mech. W. H. Howard (Tavistock), No. 812 1st Air-Mech. E. L. Spike, Australian Flying Corps.

Mentions in Despatches.

The following officers and other ranks of the Royal Air Force have been mentioned in despatches and reports for distinguished services:—

Lieut. C. E. Hughes, Lieut. (Hon. Capt.) W. R. Kempson, Lieut. (Hon. Capt.) A. E. Popham, Lieut. T. G. M. Stephens.
F/993 C.P.O. (2 S) H. J. Bagge, 6434 Acting Air-Mech. (1 E) J. R. Bell, F/358 W. O. (2nd grade) A. J. Cambridge, F/7165 Acting Air-Mech. (1 E.) G. W. Chardin, F/428 P.O. (M.E.) F. H. Cross, M/3500 P.O. (R.H.) D. W. Hamilton, F/4603 P.O. (W/T) J. W. McPherson, M/2354 W.O. (2nd grade) J. Noonan, D.S.M., F/7643 P.O. (M.E.) L. H. Phillips, F/1502 P.O. (M.E.) W. A. Prince, Leading Mechanic W. Robertson (late R.N.A.S.), F/19709 C.P.O. (3 P.H.) R. Wilkinson, W.O. 2nd Grade (S.H.), A. T. E. Witt.

Distinguished Flying Cross.

The King has been pleased to confer the Distinguished Flying Cross on the following officers of the Royal Air Force, in recognition of acts of gallantry and distinguished service. A notification of the services for which the reward has been sanctioned will be published shortly:—

Lieut. (T. Capt.) R. Affleck, Lieut. L. A. Ashfield, Lieut. (T. Capt.) E. D. Atkinson, Lieut. G. G. Bailey, Capt. T. A. Batchelor, Lieut. (T. Capt.) A. W. Beauchamp-Proctor, M.C., Capt. (T. Major) W. A. Bishop, V.C., D.S.O., M.C., Lieut. H. Briggs, Lieut. (T. Capt.) A. R. Churchman, Lieut. (T. Capt.) P. J. Clayson, M.C., Lieut. (T. Capt.) A. H. Cobby (Aust. Flying Corps), Lieut. (T. Capt.) C. H. Darley, D.S.C., Lieut. H. B. Davies, Lieut. H. Fall, Lieut. (T. Capt.) M. H. Findlay, D.S.C., Lieut. (T. Capt.) J. H. Forman, Capt. H. G. Forrest (Aust. Flying Corps), Capt. D. Gilley, Lieut. J. M. Glaisher, Lieut. W. F. J. Harvey, Lieut. J. A. King, Lieut. (Hon. Capt.) S. M. Kinkead, D.S.C., Lieut. W. H. Leete, Lieut. R. L. Manuel, (Aust. Flying Corps), Lieut. (T. Capt.) I. D. R. McDonald, Lieut. C. McEwen, M.C., Lieut. A. McGregor, Lieut. (T. Capt.) T. P. Middleton, Sec. Lieut. (Hon. Lieut.) A. Mills, Lieut. (T. Capt.) J. Mitchell, M.C., Lieut. (T. Capt.) S. N. Pike, Lieut. (Hon. Capt.) W. O. Redgate, Capt. R. H. Rusby, Lieut. L. R. Shobottom, Lieut. (T. Capt.) G. E. Siedle, Lieut. (T. Capt.) T. L. Simpson (Aust. Flying Corps), Lieut. (T. Capt.) J. A. Slater, M.C., Lieut. (T. Capt.) A. H. Whistler, Lieut. H. N. Young, Capt. W. E. Young.

Details of Gallant Deeds.

With reference to the awards gazetted on February 4th, 1918, the following are the statements of services for which the decorations were conferred:—

Awarded the Distinguished Service Order.

Sec. Lieut. (T. Capt.) JAMES BYFORD McCUDDEN, M.C., M.M., Gen. List and R.F.C.—For conspicuous gallantry and devotion to duty. He attacked and brought down an enemy two-seater machine inside our lines, both the occupants being taken prisoner. On another occasion he encountered an enemy two-seater machine at 2,000 ft. He continued the fight down to a height of 100 ft. in very bad weather conditions and destroyed the enemy machine. He came down to within a few feet of the ground on the enemy's side of the lines, and finally crossed the lines at a very low altitude. He has

recently destroyed seven enemy machines, two of which fell within our lines, and has set a splendid example of pluck and determination to his squadron.

Sec. Lieut. (T. Capt.) ANDREW EDWARD MCKEEVER, M.C., R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty. While on patrol by himself over the enemy's lines in very bad weather he encountered two enemy two-seater machines and seven scouts. By skilful manoeuvring he engaged one and destroyed it. As he turned to get back to the lines five of the enemy dived on his tail and his observer engaged and destroyed two of them. After an indecisive combat with two others he attacked and destroyed one of the enemy which had overshot him. He continued the fight with the remainder until he was within 20 ft. of the ground, when the enemy machines climbed and left him. He has recently destroyed 10 enemy machines and has shown great courage and initiative.

Awarded a Second Bar to the Military Cross.

Sec. Lieut. (T. Capt.) ALFRED CLARENCE YOUNDALE, M.C., R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty on contact patrol. When he was sent up to locate the positions gained by our troops, his first attempt was frustrated by a snowstorm. He made a second attempt, and, flying at a height of 200 ft., in spite of severe hostile fire, succeeded in locating all our positions.

Awarded a Bar to the Military Cross.

Lieut. (T. Capt.) CONRAD T. LALLY, M.C., R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty. Flying through and above the clouds, he released his bombs over his objective, well behind the enemy lines, at a height of 500 ft., under heavy fire. On two later occasions he carried out photographic reconnaissances of hostile aerodromes under very bad weather conditions, on account of which several other machines had to give up the journey. He has shown himself to be a most determined and successful leader, his example of courage and skill being of great advantage to his squadron.

Capt. LOUDOUN JAMES MACLEAN, M.C., R.E., R.F.C.—For conspicuous gallantry and devotion to duty. While leading a patrol he attacked and drove down an enemy two-seater machine and destroyed an enemy scout. He showed the greatest determination in leading patrols and splendid coolness and courage, most of his work being done under very difficult weather conditions.

Awarded the Military Cross.

Capt. JOHN CANNING LETHBRIDGE BARNETT, Oxf. and Bucks. L.I. and R.F.C.—For conspicuous gallantry and devotion to duty. When information was urgently needed he volunteered to go out on patrol in a gale of wind and most difficult conditions. The patrol was successful, and valuable information was obtained. On another occasion he made a reconnaissance in a thick fog, flying often at a height of 40 ft., and was heavily fired on from the ground. He showed the greatest courage and determination.

Sec. Lieut. (T. Capt.) CROCKER EDMUND BARRINGTON, R.F.A. and R.F.C.—For conspicuous gallantry and devotion to duty. He attacked enemy transport with bombs from a height of 50 ft., two of his bombs exploding on the rear of the column. He led his formation successfully on many occasions in very bad weather conditions and obtained valuable information.

T. Sec. Lieut. BASIL DIXON BATE, Gen. List and R.F.C.—For conspicuous gallantry and devotion to duty. He carried out a photographic reconnaissance of several distant hostile aerodromes, in the course of which he encountered in all 15 hostile aeroplanes, and took part in many combats, destroying at least one of the enemy machines. He completed the whole of his reconnaissance, and returned with his machine much damaged by the enemy's fire.

T. Lieut. RALPH SEATH STARK BROWN, Gen. List and R.F.C.—For conspicuous gallantry and devotion to duty. He bombed and wrecked a hangar in an enemy aerodrome, damaged five enemy machines which were on the ground, and scattered a party of mechanics with machine-gun fire from a height of 100 ft. He then attacked three large transport wagons, and damaged them all. On another occasion he bombed a convoy of 12 limbers, destroyed some of them, and completely disorganised the personnel with machine-gun fire from a height of 20 ft. He also carried out reconnaissances at a very low altitude in most difficult weather. He showed magnificent skill and determination.

Lieut. (T. Capt.) OLIVER CAMPBELL BRYSON, Yeo. and R.F.C.—For conspicuous gallantry and devotion to duty. He made several difficult flights in most unfavourable weather, and destroyed several hostile machines. He proved himself a determined and undaunted leader, and set a splendid example of courage on all occasions.

T. Sec. Lieut. PAUL WARD SPENCER BULMAN, Gen. List. and R.F.C.—For conspicuous gallantry and devotion to duty. On five occasions, in most difficult weather conditions, he dropped bombs and fired on enemy infantry from a low altitude, inflicting heavy casualties. During these flights he frequently obtained valuable information, and twice drove off enemy machines which attempted to interfere. He showed the greatest initiative and resource.

Lieut. (T. Capt.) ROBERT LESLIE CHIDLAW-ROBERTS, Hants. Regiment and R.F.C.—For conspicuous gallantry and devotion to duty. He constantly attacked superior numbers of enemy aeroplanes. On one occasion he repeatedly attacked five enemy machines, driving among them and attacking each in turn at short ranges. On three other occasions he brought down enemy machines. He showed great skill and courage.

Lieut. (T. Capt.) JAMES MARTIN CHILD, Manchester Regiment and R.F.C.—For conspicuous gallantry and devotion to duty. While leading a patrol he encountered four enemy scouts, one of which he destroyed. On another occasion he attacked one of two enemy two-seater machines which he encountered over the enemy's lines. He disabled the machine, and skilfully turned it towards our lines, where the enemy pilot was forced to land and he and his observer were taken prisoner. On another occasion he attacked five enemy scouts, one of which he destroyed. He showed the greatest judgment and determination.

Sec. Lieut. JOHN HENRY COOPER, A. & S. Highrs., and R.F.C.—For conspicuous gallantry and devotion to duty. He assisted to bomb an enemy aerodrome and destroyed some billets close to it. On another occasion he flew over the enemy's lines in a very thick mist and bombed some enemy transport, completely destroying one wagon and scattering the remainder with machine-gun fire. He then bombed and blew up a factory. His machine was badly hit and he returned to our lines with the greatest difficulty in very bad weather conditions. Later, in the course of three flights, he dropped bombs and fired 1,700 rounds on enemy infantry from a low altitude. He showed the greatest courage and determination.

Sec. Lieut. WALTER ERNEST DAVIS, Gloucester Regiment and R.F.C.—For conspicuous gallantry and devotion to duty during three months' service as an observer in a night flying squadron. He has taken part in many long-distance night bomb raids, and has on all occasions shown great courage and determination, which have been a splendid example to the rest of the squadron.

Sec. Lieut. FRANK HENRY DEAR, Royal Sussex Regiment.—For conspicuous gallantry and devotion to duty. His machine caught fire while he was engaged on a reconnaissance, and while he was endeavouring to put the fire out his machine got into a spinning nose-dive. With great difficulty he got the fire under and righted his machine when only a few hundred feet from the ground. He then carried out his reconnaissance. He showed great coolness and skill.

Lieut. (T. Capt.) IAN ARCHIBALD JAMES DUFF, Dorset Regiment and R.F.C.—For conspicuous gallantry and devotion to duty. He frequently bombed dumps, aerodromes, and railway stations, and on one occasion obtaining a direct hit on an engine. He took part in many long-distance night bombing raids, always dropping his bombs from a low altitude. He showed great courage and determination.

Sec. Lieut. ROBERT LEIGHTON MOORE FERRIE, R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty. He led his flight with great skill and determination in very bad weather, and dropped bombs on an enemy aerodrome from a height of 400 ft., destroying one shed and badly damaging another. On two later occasions he bombed villages and attacked enemy infantry with his machine-gun from a low altitude. He has brought down two enemy machines and assisted in destroying others. He has shown great courage and resource at all times.

T. Sec. Lieut. ALBERT MARLOW KINNEAR, Gen. List, and R.F.C.—For conspicuous gallantry and devotion to duty. He carried out a successful contact patrol at a low altitude. He was attacked by six enemy machines, his observer was wounded, and his elevator controls on one side were shot through, but he succeeded in driving off the enemy and returned with very valuable information. On the next day he carried out a contact patrol in very difficult weather at a low altitude, and under heavy rifle and machine-gun fire. Though he was wounded in the head and both his petrol tanks

were shot through he succeeded in bringing his machine back to our lines. He has frequently obtained valuable information in most difficult weather, and has shown the greatest determination and initiative.

T. Sec. Lieut. (T. Capt.) ARTHUR STANLEY LEE, Notts. and Derby Regiment, and R.F.C.—For conspicuous gallantry and devotion to duty. He bombed an enemy battery and fired on the gunners with his machine gun, and then attacked and drove off three enemy machines. While flying in very low clouds he lost his way, and could not steady his compass, and after flying for some distance, in what he believed to be the direction of our lines, he landed in open country, and was at once attacked and fired on by enemy cavalry. He had kept his engine running and succeeded in getting off, and, having fired on the enemy, found his position and returned to our lines. On another occasion he made a flight in a very thick mist, drove down an enemy machine, bombed an enemy position, and assisted the infantry to repel an enemy attack. He showed splendid courage and initiative.

Lieut. RONALD FRANK STRICKLAND MAUDUIT, D.G. and R.F.C.—For conspicuous gallantry and devotion to duty. He carried out a most valuable single machine reconnaissance at a height of 500 ft., searching enemy roads and railways and obtaining important information. On another occasion, while on a photographic reconnaissance, he encountered 20 hostile scouts and drove down two of them out of control. He has destroyed 10 enemy machines, and shown the greatest determination at his work.

Lieut. (T. Capt.) VYVYAN ARTHUR HEMMING ROBESON, R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty. In the course of three flights, which he carried out in one day in very bad weather, he bombed an enemy battery and fired 250 rounds on it from his machine gun and bombed and fired on enemy infantry. He also carried out a valuable reconnaissance. On the following day, in the course of two flights he attacked enemy infantry with bombs and machine-gun fire. He showed the greatest skill, courage and judgment.

Sec. Lieut. (T. Capt.) WILLIAM WENDELL ROGERS, R.F.C., Spec. Res.—For conspicuous gallantry and devotion to duty in shooting down seven enemy aeroplanes, and on two occasions attacking enemy troops with machine gun fire from very low altitudes. He proved himself a daring patrol leader.

Capt. HENRY THORNBURY FOX RUSSELL, R. Welsh Fus., and R.F.C.—For conspicuous gallantry and devotion to duty. He formed one of a patrol which silenced an enemy battery. He dropped bombs on two of the guns, silenced others with his machine gun and then engaged transport on a road. This operation was carried out under heavy fire and very difficult weather conditions. On another occasion he dropped bombs and fired 300 rounds on enemy trenches from a height of 100 ft. His machine was then hit by a shell and crashed in front of our advanced position. He reached the front line, and while there saw another of our machines brought down. He went to the assistance of the pilot, who was badly wounded, extricated him under heavy fire and brought him to safety. He showed splendid courage and initiative.

T. Capt. WILLIAM HAROLD NELSON SHAKESPEARE, R.F.C.—For conspicuous gallantry and devotion to duty. He carried out a most successful contact patrol in very bad weather at a height of 400 ft. and brought back very valuable information. Later, he carried out another successful contact patrol at a low altitude, his machine being subjected to intense rifle and machine-gun fire. He is a gallant and determined pilot and has set a fine example to his squadron.

Sec. Lieut. LAWRENCE ERNEST SHAW-LAWRENCE, E. Kent R. and R.F.C.—For conspicuous gallantry and devotion to duty. He carried out 13 successful contact patrols and reconnaissances, many of them at a very low altitude and in very bad weather under heavy rifle and machine-gun fire. On one occasion during an enemy attack he carried out three patrols in one day at a low altitude under heavy fire and brought back valuable information. In the course of one patrol he attacked a large party of the enemy from a height of 100 ft. and dispersed them with machine-gun fire. He showed the greatest determination and initiative.

T. Sec. Lieut. (T. Capt.) JAMES ANDERSON SLATER, Gen. List and R.F.C.—For conspicuous gallantry and devotion to duty. When returning from a patrol he attacked enemy infantry, silenced a field gun and fired on transport. On another occasion he silenced a battery in very difficult weather conditions, fired on ammunition wagons and enemy infantry, and brought back his patrol safely. He also led a patrol of 12 machines in very bad weather to attack a wood held by the enemy. His patrol dropped over 30 bombs, fired 3,000 rounds and drove the enemy from the wood with heavy casualties. In the course of this flight six enemy

scouts were engaged and driven off. Later, he led a similar patrol with great success. He showed splendid courage and determination.

Australian Imperial Forces.

Lieut. LESLIE HUBERT HOLDEN, F.C.—For conspicuous gallantry and devotion to duty. Whilst on a special mission he dropped a bomb direct on a support trench full of the enemy, causing them to scatter, and another bomb upon a strong point which was holding up our advance. He also bombed a large group of enemy infantry, and turned his machine gun on them from a height of 100 ft. He rendered very valuable service throughout the operations.

Lieut. RICHARD WATSON HOWARD, F.C.—For conspicuous gallantry and devotion to duty. Whilst separated from his patrol owing to thick mist he drove down an enemy aeroplane out of control. He then engaged a hostile two-seater, which he forced to land in our lines. On another occasion, though attacked at a height of 400 ft. by an enemy two-seater, he manoeuvred, shot the observer, and caused the hostile machine to land, apparently in difficulties, but intact. He had consistently done excellent work at very low altitudes.

Lieut. FREDERIC GEORGE HUXLEY, F.C.—For conspicuous gallantry and devotion to duty. He dropped a bomb upon a gun which was being moved to the rear, damaging it and killing three horses, and another bomb on a wagon, which was blown over, two of the personnel and one of the horses being killed. He then engaged a body of 300 troops marching along a road, and scattered them, causing 14 casualties. Later, having disorganised a large advance party of enemy

infantry with bombs and machine-gun fire, he shot down an enemy scout. He is a very keen and daring pilot.

Capt. ROY CECIL PHILLIPPS, F.C.—For conspicuous gallantry and devotion to duty. He has performed continuous gallant work at very low altitudes in almost impossible weather. Whilst flying alone in a mist he forced an enemy aeroplane to land. On two occasions, flying at an altitude of 200 ft., he made very valuable reconnaissances, and his reports on the general situation were of the greatest value. His leadership is excellent, and he has set a high example to his flight.

Lieut. HARRY TAYLOR, F.C.—For conspicuous gallantry and devotion to duty. Whilst he was engaging enemy troops his machine was shot down and crashed in the open. On crawling out of his machine he was fired upon by enemy snipers, whom he engaged with a rifle, which he had picked up. He eventually made his way back to one of our patrols, carrying a badly-wounded man whom he had discovered on the way. On a later occasion, when flying at 1,500 ft., he engaged an enemy two-seater, which dived steeply to the ground and crashed. He is a clever and daring pilot, and is always ready to perform any kind of duty.

Lieut. (T. Capt.) GORDON CAMPBELL WILSON, F.C.—For conspicuous gallantry and devotion to duty. His work at low altitudes under very adverse conditions has been of the greatest value. On one occasion he scattered the enemy from a strong point with his machine gun. On another occasion he bombed and fired upon a field gun, killing two gunners. Despite the constant attacks of enemy scouts he held his formation together, which was out on a bombing raid, and enabled it to drop all its bombs on the objectives, an enemy aeroplane being also driven down. His dashing leadership has been a splendid example to his flight.



AIRCRAFT WORKERS STRIKE.

THE strike of woodworkers in the aircraft industry in London, which originated at Messrs. Waring and Gillow, Alliance Aeroplane Works, on Wednesday, June 26th, was continuing up to the time of going to Press. In these circumstances the Minister of Munitions feels that the full facts of the case should be widely known, so that both the general public and the men concerned may be in full possession of them.

The strike followed upon the dismissal of a shop steward, named Rock, on June 26th. The reason for his dismissal was that he had blown a whistle summoning a meeting of workmen during shop hours, although a previous warning had been given that meetings of this kind must not be summoned during shop hours. In any case, it is obvious that the calling of meetings in this way must necessarily gravely interfere with production and discipline in the shop.

The Ministry of Munitions was thereupon brought in touch with the duly constituted Trade Union leaders of the aircraft industry in London, with a view to arriving at a settlement. It was agreed on Wednesday, July 3rd, with the Unions that work should be resumed at the Alliance Aeroplane Works on Thursday morning, and that arbitration should follow at 11 o'clock on that morning, on the clear understanding that one of the questions which would be submitted to arbitration would be whether or not Rock should be reinstated. The Minister observed his part of the arrangement, and on Thursday morning at the time specified an independent arbitrator appointed by the Ministry of Labour attended at the works. He found, however, on arrival that the men had not resumed, and it was then discovered that the unofficial representatives of the men had, contrary to the advice of their legitimate Trade Union representatives, advised the men not to resume work.

The result of the men's refusal, on the advice of their unofficial representatives, to resume work on Thursday morning was a considerable extension of the trouble throughout the London area. In spite of the fact that time has been given to the men to think better of the matter work has not been resumed.

The Minister, therefore, wishes it to be known:—

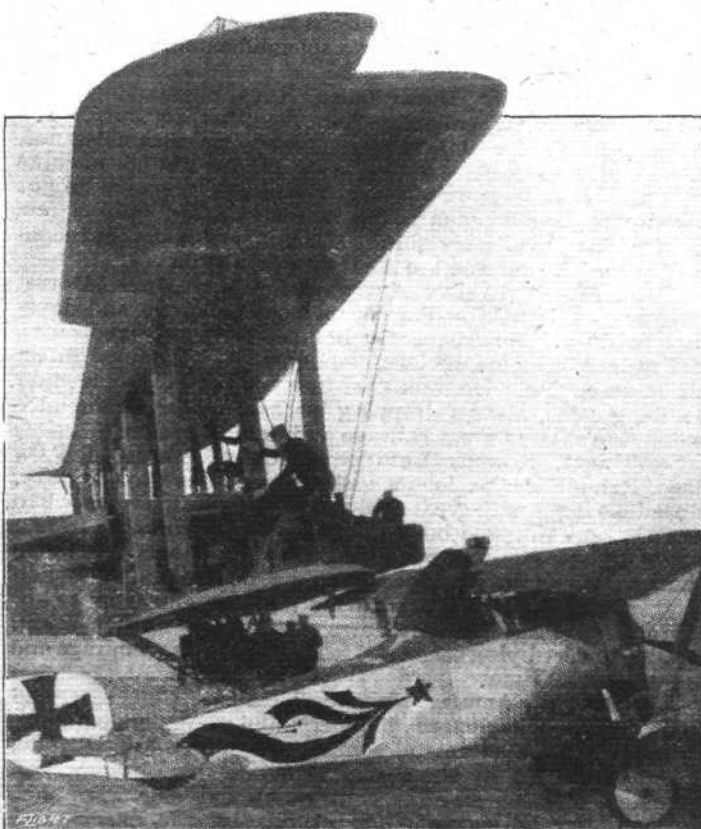
(1) That the strike is not only illegal but is unauthorised by the trade unions;

(2) That arbitration was accepted by the trade union leaders, and has been brought to naught by certain persons not representative of any recognised labour organisation; and

(3) That the interruption of work is a serious interference with the output of munitions.

The London District Aircraft Committee held a three hours' conference on Monday night, and at the close the following official statement was made to a Press representative by Mr. S. Stennett, the secretary of the committee:—

"The London District Aircraft Committee had considered the dispute in the London area arising out of the discharge of a man at Messrs. Waring and Gillows', and will approach the Ministry of Munitions in the morning with a view to endeavouring to come to an amicable settlement."



THE LONG AND THE SHORT OF IT.—A Handley-Page bomber and a Nieuport single-seater are objects for Hun curiosity.

THE ROLAND SINGLE-SEATER CHASER, D. II.*

THE single-seater Roland biplane, D. II, which made its first appearance about March, 1917, is still frequently encountered by our pilots, especially on the Eastern sectors. It has therefore seemed to us of interest to give a description of it with detailed drawings. The dimensions of the Roland D. II are very small:—

Span of upper plane	8.90 m.
Span of lower plane	8.50 m.
Length overall	6.95 m.
Height	2.95 m.

total thickness of the six layers is only 1.5 mm. From the pilot's seat to the tail there are only four formers of very small thickness.

Between the pilot's seat and the motor the *fuselage* forms a projection tapering upwards to form at its upper extremity an edge 0.11 m. wide, to which are attached the radiator and the top plane. The top plane is cut away to accommodate the radiator. This arrangement of an upward projection of the body itself takes the place of the *cabane*. On the lower part of the *fuselage*, and built integrally with it, there



Three-quarter rear view of the Roland single-seater chaser, D. II.

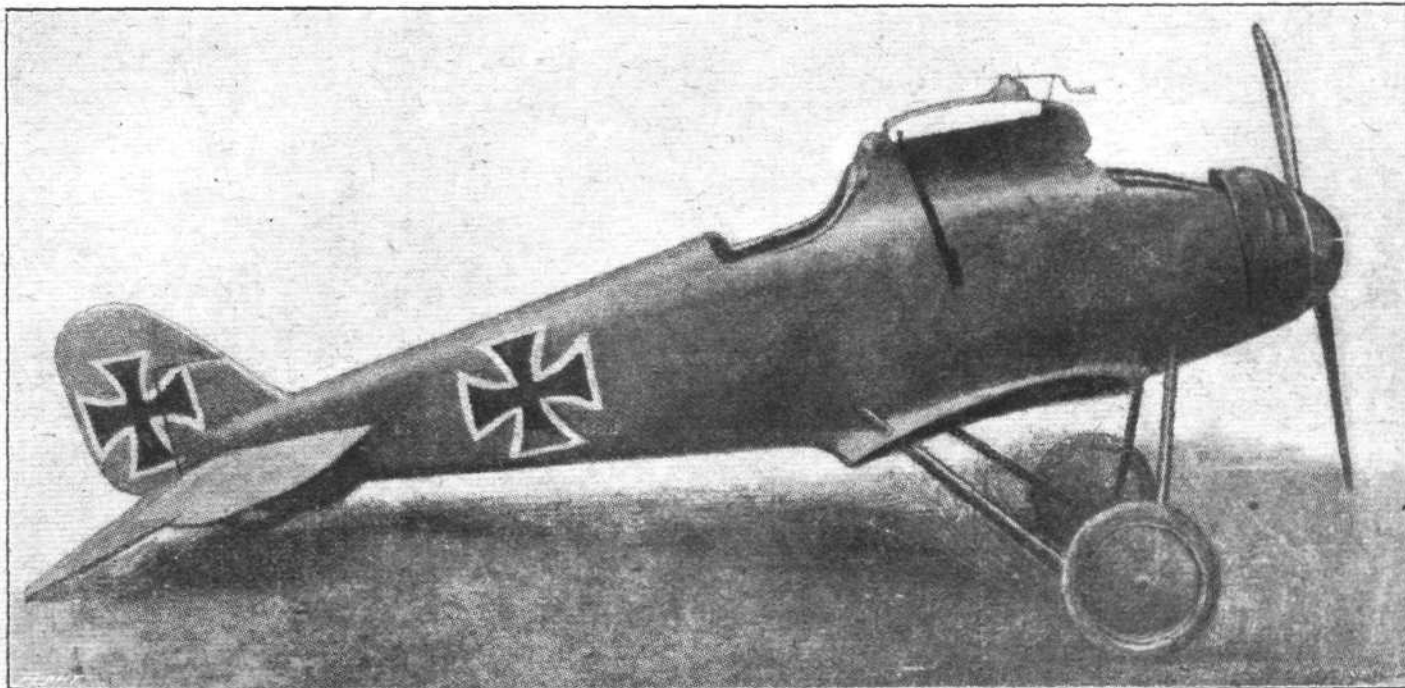
Its weight—827 kilogs.—with full tanks is slightly greater than that of the Albatros D. III chaser. The lifting surface being 23 sq. m., the wing loading is 36 kg./sq. m. (7.2 lbs./sq. ft.).

Fuselage.

The construction of the *fuselage*, and its peculiar shape, merit special attention. Being built entirely of three-ply wood and covered with fabric, it is of the monocoque type, of oval section, and terminates at the stern in a vertical

are the roots to which the two halves of the lower plane are attached. At the rear the tail skid, of wood with a shoe of metal, pierces the *fuselage*, and is supported on a projection of ply wood similar to that employed on the Nieuport.

The pilot is placed very high, and has in front of him two wind screens, one on each side of the central structure carrying the upper plane. The view in a forward direction being thus divided would appear to be inferior to that obtainable in other types of machines.



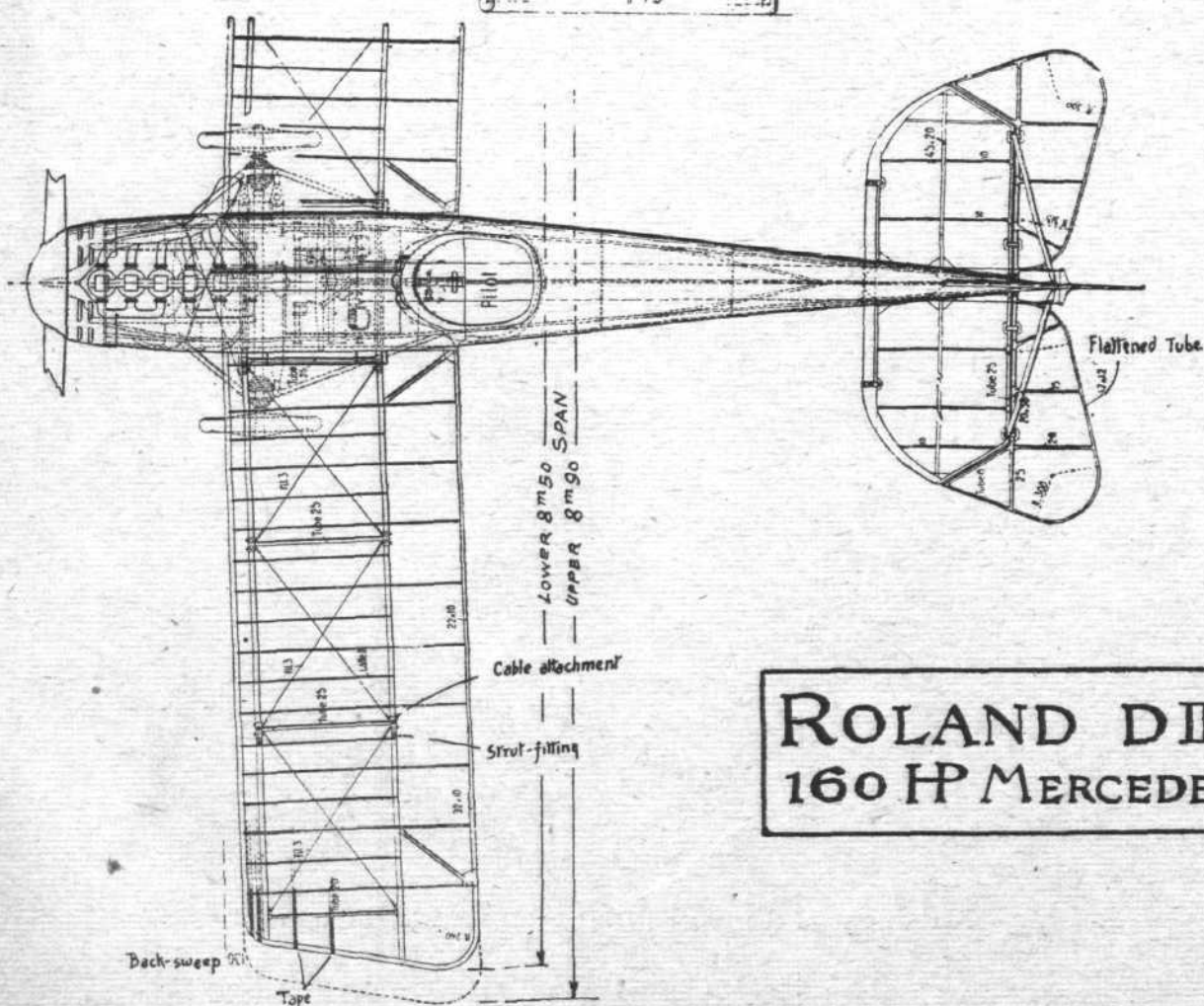
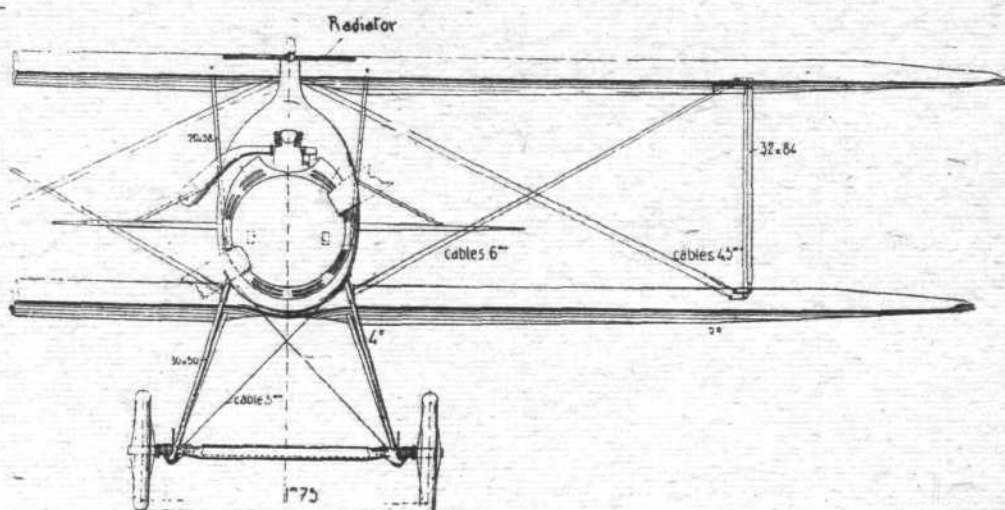
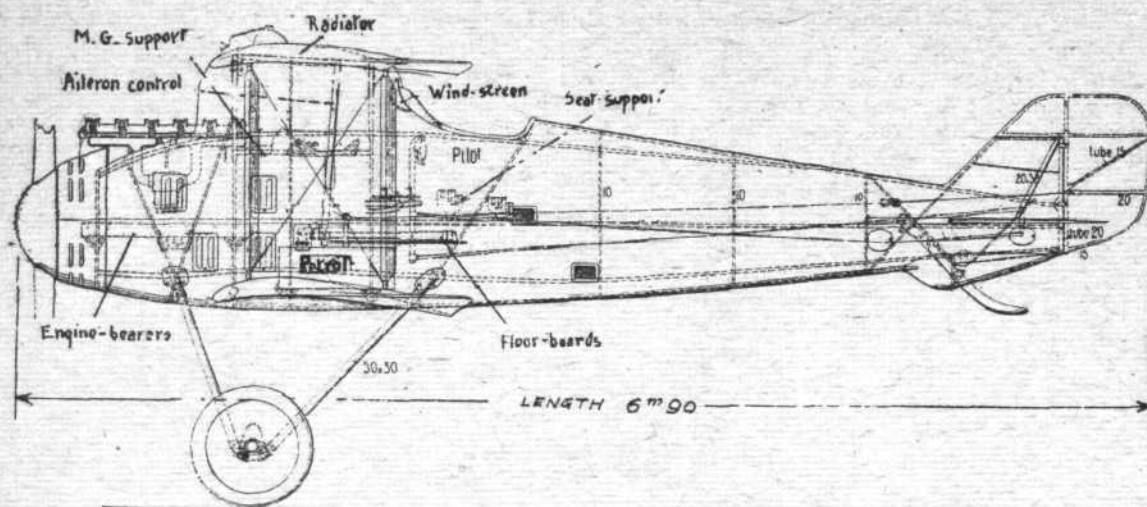
The *fuselage* of the Roland D. II, with the wings removed.

knife edge. The construction is excessively light, the framework consisting of very thin *longerons* running through the whole length of the body, the curves of which they follow. Rigidity is only provided by the ply wood, made in two halves joined along the middle of the top and bottom. The

* Translated from *L'Aérophile*.

Planes.

The planes are of trapezoidal plan form, of unequal span, without stagger and dihedral angle, but with a sweep-back of 1.5°. The chord, which is uniform, is 1.45 m. and the gap 1.34 m. The ribs are at right angles to the leading edge. As the inter-plane struts are secured to the spars



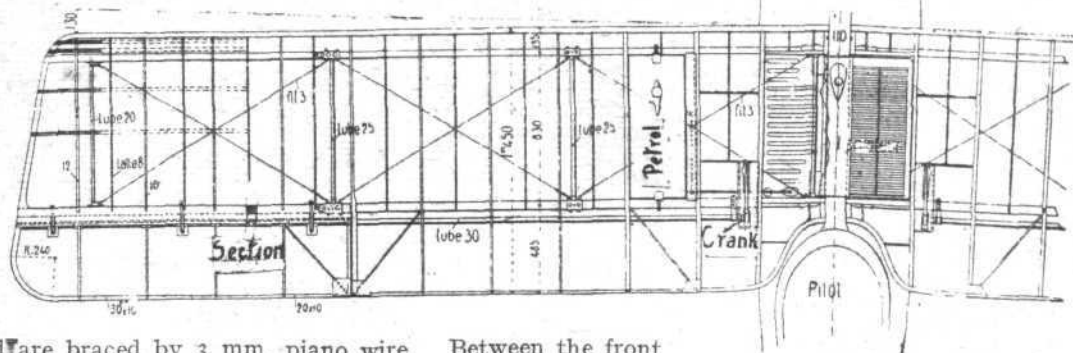
ROLAND D.II.
160 HP MERCEDES.

THE ROLAND SINGLE-SEATER CHASER, D. II.—Plan, side and front elevations to scale.

over the same rib, it follows that in the front view the struts do not come quite in line. The spars of the upper plane, which are of spruce, are spaced 0.83 m. apart, the front spar being 0.13 m. from the leading edge. The ribs, of which there are 12, are of I section with flanges of ash. They are spaced about 0.37 m. apart. In the middle of each interval there is a false rib running from the leading edge to the rear spar. In each wing there are four compression members in the form of steel tubes 25 mm. diameter. These tubes are evenly spaced, the distance between them being 1.30 m.,

the machine. The fixed tail plane is built of wood, while the two elevator flaps are constructed entirely in metal.

A note should be made of the attachment of the tail plane to the body. The leading edge of the tail plane is hollowed out, and into the hollow space thus formed fits a piece of wood which runs across the fuselage and the ends of which project 0.50 m. on each side. Further rigidity is given to the structure by two stream-line tubes running from the tail plane to the rudder hinge on the vertical fin. The rudder, which is roughly rectangular with rounded corners and has



The upper plane of the Roland D. II.

and are braced by 3 mm. piano wire. Between the front spar and the leading edge there are two tapes running parallel to the spars and crossing alternately over and under consecutive ribs. Two more tapes are similarly arranged between the spars. Certain corners are stiffened by reinforcement with ply wood. Each of the upper planes carries an

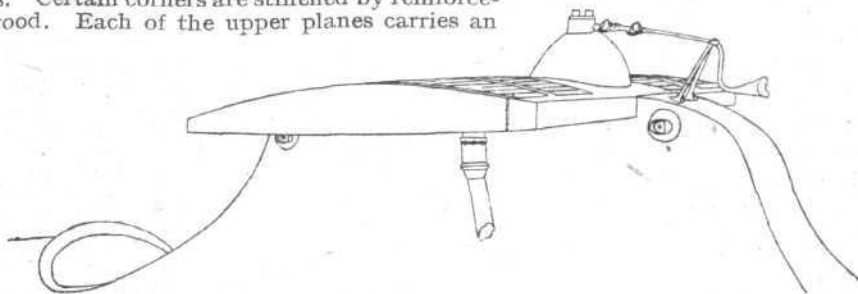


Diagram of "bump" supporting top plane and radiator on the Roland D. II.



The quick-release bolt for attaching main planes on the Roland D. II.

aileron, which is not balanced and of equal chord throughout. A strip of three-ply wood, under the fabric, covers and protects the hinge fixed on the rear spar. The aileron measures 1.82 m. in length and has a chord of 0.42 m. Its leading edge is a steel tube of 30 mm. diameter. The aileron cranks are operated, as in the Nieuport, by two vertical tubes. In the left top plane is mounted a petrol service tank. Openings in each of the halves of the top plane accommodate the radiator. The upper planes are attached direct to the highest portion of the fuselage by means of special bolts resembling somewhat those used on the L.V.G. C. IV.

The lower planes are constructed in much the same manner as the top ones. The spars are similarly arranged and are consequently the same distance apart. In each wing there

a forward projection for balancing, is built up of steel tubes, while the fin, which is made integral with the body, is of three-ply wood.

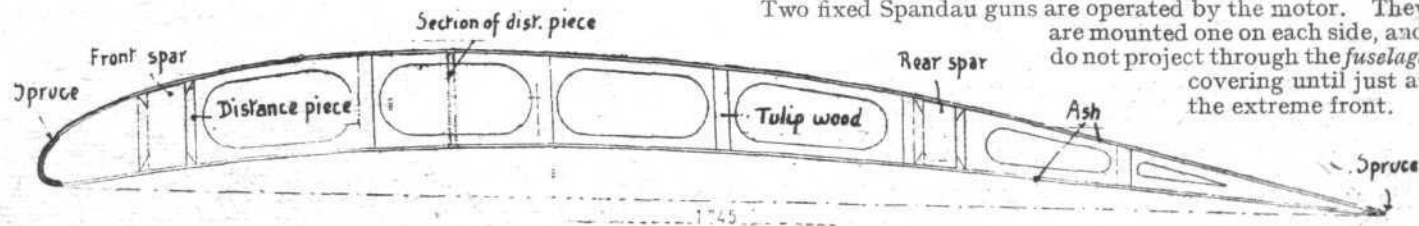
The elevator cables, which are attached to a central crank lever, are enclosed inside the body except for the last meter or so from the stern.

Engine.

The engine fitted on the Roland D. II is a 160 h.p. Mercedes six-cylinder vertical engine. The exhaust collector is nearly horizontal, and is placed on the starboard side. In addition to the gravity tank in the top plane there is a main petrol tank measuring 70 x 70 x 25 under the rudder bar. The airscrew having been smashed it has not been possible to identify it. It had its boss enclosed in the usual "spinner."

Armament.

Two fixed Spandau guns are operated by the motor. They are mounted one on each side, and do not project through the fuselage covering until just at the extreme front.



One of the main plane ribs of the Roland D. II.

are 10 ribs, of which nine measure 0.01 m. and the last one 0.025 m. Between the ribs are false ribs measuring 10 mm. The internal wing bracing is the same as that of the top plane, but the distribution of the four steel tube compression struts (of which one is 20 mm. and the others 25 mm.) is somewhat different. From the first to the second is 1.17 m., from the second to the third is 1.13 m., and from the third to the fourth 1.11 m. The lower planes are attached to wing roots built integrally with the fuselage. The angle of incidence is 4° at the second rib and 3° at the seventh. The inter-plane struts are in the form of steel tubes 0.025 m. diameter, stream-lined with a wood fairing which brings their depth to 0.09 m.

The Tail.

The shape of the tail can be seen from the plane view of

Undercarriage.

The undercarriage is formed by two pairs of Vee struts, braced diagonally by two crossed cables. Their attachment to the fuselage occurs at two sloping formers. The axle, which is placed between two cross tubes, is enclosed in a stream-line casing. The track is 1.75 m. The wheels measure 760 by 100. The shock absorbers are of rubber.

It has been said of the Roland D. II that owing to its light construction the fuselage is apt to get out of shape, and that it has a tendency to spin. As up to the present no test of this machine has been possible, our opinion can only be based on the testimony of our aviators. From this it appears that this machine, of new conception, must be counted among the best of German chasers. The Roland D. II single-seater enters still into the composition of certain enemy squadrons.

THE ROLL OF HONOUR

(Where an Officer is seconded from the Army, his unit is shown in brackets.)

Published June 29th.

Killed.

Hamilton, Capt. H. J. (D. Satterthwaite, Sec. Lieut. J. of Corn. L.I.).
Pullen, Sec. Lieut. W. S. (H.L.I.).
Russell, Lieut. J. G.

Previously Missing, now reported Killed.

Dennis, Sec. Lieut. (Sher. F., attd. R.F.C.).

Died of Wounds.

Welford, Sec. Lieut. L. C.

Wounded.

Anderson, Capt. S. (H.L.I.).
Beare, Sec. Lieut. P. R.
Boyce, Sec. Lieut. E. F.
Hall, Sec. Lieut. R. S. C.
Hamilton, Lieut. H. E. (Aust. F.C.).
Lyell, Lieut. W. H. (Gord. Highrs.).

Missing.

Bertrand, Sec. Lieut. P.
Fellowes, Lieut.-Col. P. F. M.
Levick, Sec. Lieut. C.

Previously Missing, now reported Prisoners in Turkish hands.

Haig, Lieut. F. W. (Aust. F.C.).
Rutherford, Capt. D. W. (Aust. F.C.).

Published July 1st.

Killed.

Boles, Lieut. J. L.
Champneys, Sec. Lt. J. A. L.
Durrant, Sec. Lieut. L. A.
Ellison, Lieut. S. W.

Wounded.

Cameron, Sec. Lieut. G. A.
Coghlan, Sec. Lieut. E. A.
Gamon, Capt. J.
Holland, Sec. Lieut. J. H. (R. Fus.).

Missing.

Gannaway, Sec. Lieut. C. H.
Glasspoole, Sec. Lieut. G. H.
Goller, Sec. Lieut. J. M.
Hirst, Sec. Lieut. S.
Hughes, Lieut. J. M. (S. Lancs R., T.F.).

Published July 2nd.

Killed.

Barlow, Sec. Lieut. L. C. J.
Bonner, Sec. Lt. W. (Lancs.).
Brown, Sec. Lieut. R. R.
Campbell, Sec. Lieut. K. T.
Douglas, Sec. Lieut. J.
Erskine, P.F.O. J.
Fuhr, Sec. Lieut. H. R.
Harrow, Sec. Lieut. R. W. T.
Hastie, Sec. Lieut. H. N.

Previously Missing, now reported Killed.

Moore, Lieut. C. G. (R.F.C.).

Died of Wounds.

Nelson, Lieut. J. N.
Rennie, Lieut. E. C. (R.G.A.).

Wounded.

Ashford, Sec. Lieut. A. E. N.
Davidson, Sec. Lieut. J. D.
Dean, Capt. H. P.
Forge, Sec. Lieut. J. S.
Gogarty, Lieut. A. J.
Hughes, Sec. Lieut. H. A.
Jourdan, Lieut. W. T.
Kelly, Lieut. V. T.

Missing.

Atkins, Sec. Lieut. W. T. J.
Burdick, Capt. F. W. (Lond. R.) (T.F.).
Collett, Lt. H. S. (Suff. R.).
Evans, Lieut. H. B.
Fyfe, Sec. Lieut. R. J.
Jackman, Lt. J. R. (D. of Well.).
Kemp, Sec. Lieut. P.
Leigh, Lieut. R. L.
MacCartney, Lieut. D. A.

Published July 3rd.

Killed.

Comber-Taylor, Capt. E. H.
Davis, Lieut. H. E. (M.C.).
Humberstone, Sec. Lieut. J.

Previously reported Wounded, now reported

Died of Wounds.

Dixon, Sec. Lieut. W. H., Seaforth Hrs.

Wounded.

Bell, Lieut. R. S.
Grant, Sec. Lieut. J. D.
Lane, Sec. Lt. R. A. (R.G.A.).
Lane, Lieut. R. B.
McGeown, Sec. Lieut. J. S.

Missing.

Connolly, Sec. Lieut. S. M.
Mason, Sec. Lieut. H.

Published July 4th.

Killed.

Flynn, Sec. Lieut. V. J.
Harran, Lieut. F. St. P.
McFarlane, Lieut. W. S. (R. Scots).

Previously Missing, now reported Killed.

Wilson, Capt. J. R. (R.E., attd. R.F.C.).

Died.

Leach, Lieut. F. (Manch.).

Wounded.

Acheson, Sec. Lt. J. (R.G.A.).
Clark, Sec. Lieut. A. S. (Cam. Highrs.).
Deroeper, Lieut. J. G. H.
Dove, Sec. Lieut. C. B.

Missing.

Carr, Sec. Lieut. R. G.
Titchener, Lieut. F.

Published July 6th.

Killed.

Cameron, Sec. Lieut. J.
Cole, Sec. Lieut. G.
Jones, Sec. Lt. S. (Aus. F.C.).
Kitchen, Lieut. J. F. R.
Loram, Sec. Lt. S. A. (Aus. F.C.).

Previously Missing, now reported Killed.

Davidson, Sec. Lieut. S.
Gavaghan, Sec. Lt. C. (R.F.C.).
Kennedy, Capt. D.S. (R.F.C.).
McNeil, Sec. Lieut. F. G. (R.F.C.).

Accidentally Killed.

Turner, Sec. Lieut. F. C. (Aus. F.C.).

Wounded.

Ebeling, Sec. Lieut. C. R. (Aus. F.C.).
Erskine, Lieut. H.

Missing.

Cobbin, Sec. Lieut. A. J.
Cutmore, Lieut. W. C.
Dumville, Sec. Lieut. E. (W. Rid. Reg., T.F.).
Duncan, Sec. Lieut. W. G.
Hammond, Lt. T. J. (Aus. F.C.).

Previously Missing, now reported Prisoner in German hands.

Rintoul, Sec. Lieut. A. (Aus. F.C.).

Published July 8th.

Killed.

Hamilton, Sec. Lieut. G. C. R. Maltby, Sec. Lieut. A. J.
Henderson, Capt. I. H. D. Reynolds, Lieut. G. E. (E.
(M.C.), (Arg. and Suth'd Ont. R.).
Highrs.). Stewart, Sec. Lieut. H. M.
Hollingworth, Lieut. A. (Que. Tyrrell, Capt. J. M.
R.). Urrich, Lieut. C. P.

Previously Missing, now reported by German Government Killed or Died of Wounds.
Stuart-Smith, Lieut. P. J. (Can. Cav.).

Previously reported Prisoner in German hands, now reported Killed while Attempting to Escape.
Medlicott, Sec. Lieut. H. W. (R.F.C.).

Accidentally Killed.

Scott, Lieut. N. (E. Ont.).

Died.

Bennett, Lieut. C. N. (Can. M.G.C.).

Wounded.

Allan, Lieut. D. J. (Manit.). Forsyth, Sec. Lieut. J.
Campbell, Lieut. K. P. (Sask.). Row, Sec. Lieut. H. N. E.
Carey, Sec. Lieut. R. B. Style, Sec. Lieut. C. S.

Missing.

Foord, Lieut. E. A. (Manit.). Robins, Lieut. S. M.
Harper, Lieut. N. S. B. (C.R.).

Previously Missing, now reported Prisoners in German hands.

MacDonald, Lieut. D. A. (Can. Zieman, Lieut. J. R. (E.
For. Corps). Ont.).

Published July 9th.

Killed.

Bannister, Lieut. H. S. Carter, Sec. Lieut. A.

Previously Missing, now reported Killed.
Gill, Lieut. H. G. (W. Yorks., attd. R.F.C.).

Died of Wounds.

Storrs, Sec. Lieut. H. L.

Died.

Carling, Lieut. J. B. Hodge, Sec. Lieut. W.

Previously Missing, now reported Wounded and Prisoner.

Holman, Sec. Lieut. H. G.

Previously Missing, now reported believed Wounded and Prisoners.

Crawford, Sec. Lieut. W. I. Wilson, Lieut. H. B. B.
(K.R.R.C.). (Q.O., Glasgow Yeo.).

Previously Missing, now reported Prisoner.

Ratcliffe, Sec. Lieut. T.

Previously Missing, now reported believed Prisoners.

Boulton, Sec. Lieut. F. E. Rainier, Sec. Lieut. G. A.
Harris, Sec. Lieut. N. B. Tansley, Sec. Lieut. H. E.
Lamont, Sec. Lieut. W. (K.R.R.C.).
Mitchell, Sec. Lieut. H.

THE ROYAL AERO CLUB OF THE U.K.

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	£	s.	d.
Total subscriptions received to July 2nd, 1918..	12,780	6	10
Sec. Lieut. W. R. Douglas Shaw	0	10	6
Marine and General Aviation Co.	0	10	6

Total, July 9th, 1918 12,781 7 10

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

The Air Minister.

It was announced in the *London Gazette* of July 9th that the Right Hon. Sir William Douglas Weir, K.C., Secretary of State for the Royal Air Force, on whom a barony has been conferred, has assumed the name, style and title of Baron Weir of Eastwood, in the county of Renfrew. Lord Weir took his seat in the House of Lords on Tuesday.

A Professorship of Aviation.

The Secretary of State for the Royal Air Force announces that the sum of £25,000 has been placed at the disposal of the Government by Sir Basil Zaharoff, G.B.E., for the purpose of endowing a professorship of aviation. This munificent donation is in continuation of donations previously made by Sir Basil Zaharoff for the foundation of Chairs of Aviation at the Universities of Paris and Petrograd, in order to assist in the progress of aviation among the Allies, and it is his hope that the occupants of the chairs will continuously exchange views.

It is proposed that the professorship shall be called the Zaharoff Professorship of Aviation, and that it shall be a professorship of the University of London attached to the Imperial College of Science and Technology.

Medals for Brave Women.

It was announced in the *London Gazette* of July 8th that His Majesty the King has been pleased to approve of the award of the Military Medal to the under-mentioned ladies for distinguished services in the field:—

Unit-Administrator Mrs. M. A. C. Gibson, Q.M.A.A. Corps, for conspicuous gallantry and devotion to duty during an

enemy air raid when in charge of a Q.M.A.A.C. camp, which was completely demolished by enemy bombs, one of which fell within a few feet of the trench in which the women were sheltering. During the raid Unit-Administrator Gibson showed a splendid example. Her courage and energy sustained the women under most trying circumstances, and undoubtedly prevented serious loss of life.

Miss S. Bonnell, First Aid Nursing Yeomanry; Miss E. Gordon-Brown, First Aid Nursing Yeomanry; Miss A. M. Faulkner, First Aid Nursing Yeomanry; Miss E. Faulder, First Aid Nursing Yeomanry; Miss N. Dewhurst, V.A.D., attached First Aid Nursing Yeomanry, for gallantry and conspicuous devotion to duty when an ammunition dump had been set on fire by an enemy bomb and the only available ambulance for the removal of wounded had been destroyed. These ladies subsequently arrived with three ambulances, and, despite the danger arising from various explosions, succeeded in removing all the wounded. Their conduct throughout was splendid.

Frightfulness Again.

A MESSAGE transmitted through the wireless stations of the French Government states that the Fokker aeroplane D2371, recently brought down in French lines, was armed with two Spandau machine guns, one of which was fed with cartridges with incendiary phosphorous bullets, and the other with explosive or incendiary bullets of a new type, which explode on contact.

It is added that the bringing down of this machine proves that former orders have been abrogated, and that Germany has decided once more to violate international law.

REPORT ON THE FRIEDRICHSHAFEN BOMBER.

[Issued by the Technical Department (Aircraft Production), Ministry of Munitions.]

(Continued from page 741.)

Forward Cockpit.

This is attached to the main body by four bolts with clips similar to those just described. It consists of a light wooden framework, covered throughout by three-ply. Two views of this portion of the machine are given in the photographs Figs. 22 and 23. This cockpit can be divided off from the main cockpit by means of a fabric curtain. Its occupant is provided with the folding seat, as shown, and manages a gun and the bomb dropping gear.

Engine Mounting.

The engine bearers have the section shown in Fig. 24, and are each built up of two pieces of pine united by tongues.

cedes carburettor the throttle is so arranged that it cannot be fully opened near the ground without providing too weak a mixture, and it is thought possible that the full ignition advance is not obtained until this critical opening is reached.

On several German bombing aeroplanes grease pumps for lubricating the water pump spindle have been found. Fig. 29 shows the design as fitted to the Friedrichshafen.

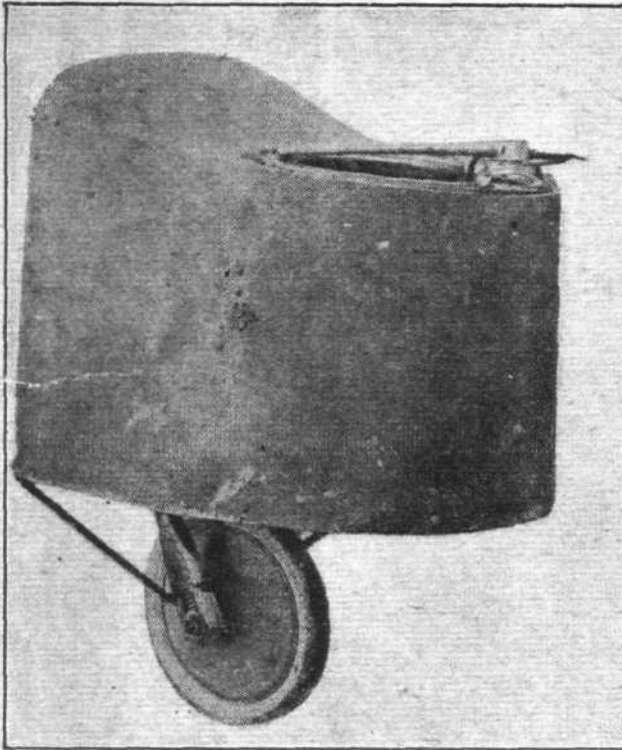


Fig. 22.—Front portion of the nacelle.

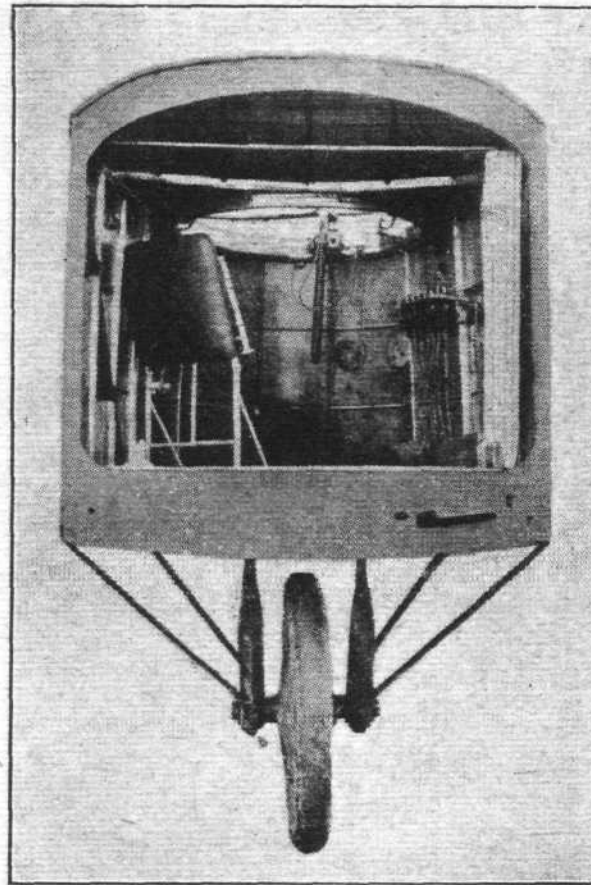


Fig. 23.—Inside of the front cockpit.

On their top surface they are faced with ply wood and at the bottom with ash. A strip of ash applied to the upper outer corner of the bearer gives it an "L" section, and has screwed into it the threaded sockets for the set screws of the lower part of the engine fairing. The engine bearers taper sharply at each end. They are mounted on the "V" struts by means of acetylene welded brackets, constructed as shown in sketch, Fig. 25. These, it will be seen, are of box form, and form a line round the streamline tube.

The engine cowling is a particularly fine piece of work, and two views are given in sketches 26 and 27. The lower portion is attached to the engine bearers by set screws, but the upper part is readily detachable, being furnished with turn buttons. This cowling allows the cylinders of the engine to be exposed to the air. A large scoop is placed in front, so as to permit a free flow of air over the bottom and sides of the crank chamber, whilst at the rear three large trumpet shaped cowls are provided so that a draught of air is forced against the crankcase in the neighbourhood of the carburettor air intake. In the rear the fairing abuts against the propeller nave, whilst in front it is attached to the radiator. It will be noticed that at each side of the radiator are narrow air scoops, the object of which is to promote a draught past the oil tank and front cylinder heads.

Engines.

The motors are the standard 260 h.p. Mercedes with six cylinders in line. Full details of this engine have been published, and it is only, therefore, necessary to notice one or two points in connection with the installation.

A new departure is the interconnection of the throttle and ignition advance controls. This is carried out in the manner illustrated diagrammatically in Fig. 28. It will be seen that a considerable movement of the throttle can be made independently of the ignition advance. In the Mer-

It consists of a ratchet and pawl operated grease pump, secured by a bracket to one of the engine struts, and worked from the pilot's cockpit by a lever, and a stranded steel cable passing over a pulley, the pawl being returned by a long coiled spring.

The engine numbers are respectively MN.32299 and MN.36228.

Photograph Fig. 30 shows the exhaust pipe.

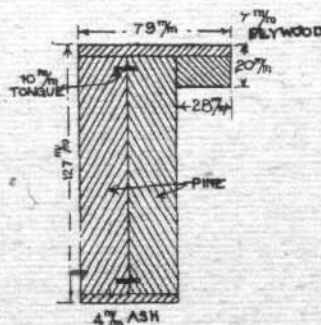


FIG. 24.

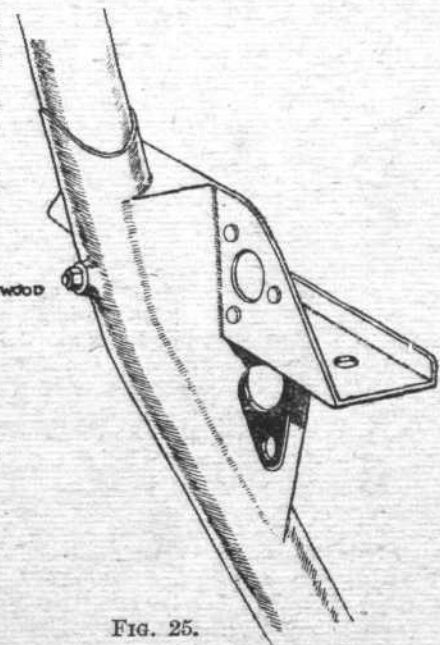


FIG. 25.

This is of new design, although it incorporates the well-known expansion joints attached to the flanges. It will be seen that it is fitted with what amounts to a rudimentary

silencer, whereas in previous machines of a similar type to the Friedrichshafen an open-ended exhaust pipe was used.

Radiators.

Each radiator is provided with an electric thermometer fitted into the water inlet pipe, as shown in the sketch, Fig. 32,

circumstances by the gear, shown in the sketch, Fig. 31, of which the handle is mounted on the roof of the nacelle, immediately behind the pilot's seat. Three positions are provided for the handle, which operates the two shutters simultaneously by means of return cables.

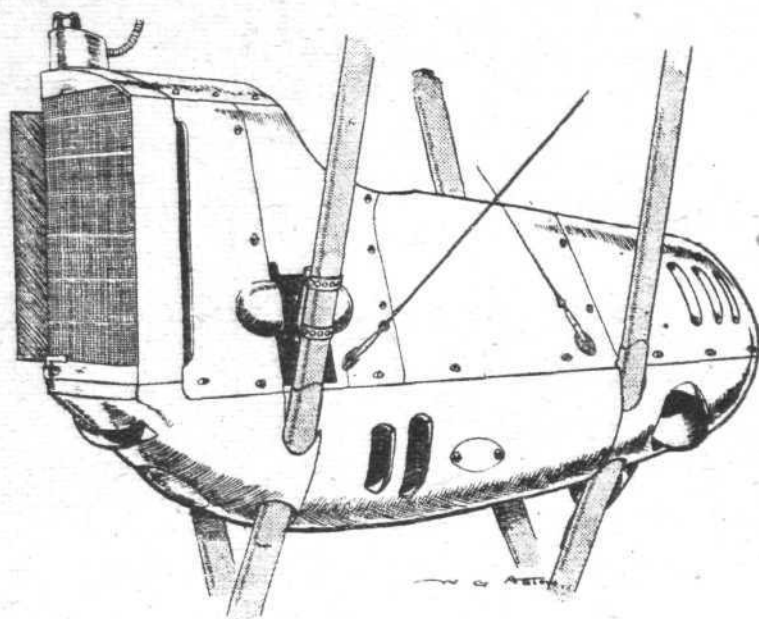


Fig. 26.

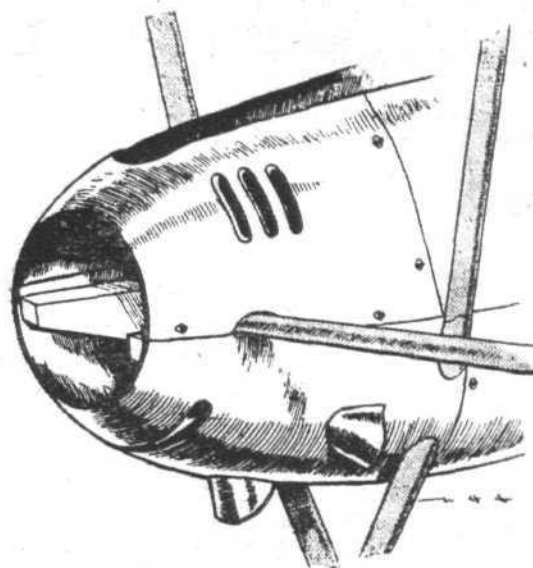


Fig. 27.

these thermometers being wired up to a dial on the dashboard, which is furnished with a switch, so that the temperature of either radiator can be taken independently.

Each radiator is provided with an electric thermometer fitted into the water inlet pipe, apparently square tubes to the number of 4,134, and measuring roughly 6 mm. each way. The radiator with shutter full open is shown in Fig. 33.

The honeycomb radiators are of "V" section, and each is provided with a shutter which covers up a little more than

Immediately above the main radiator, and let into the upper main plane between the front spar and the leading edge, is

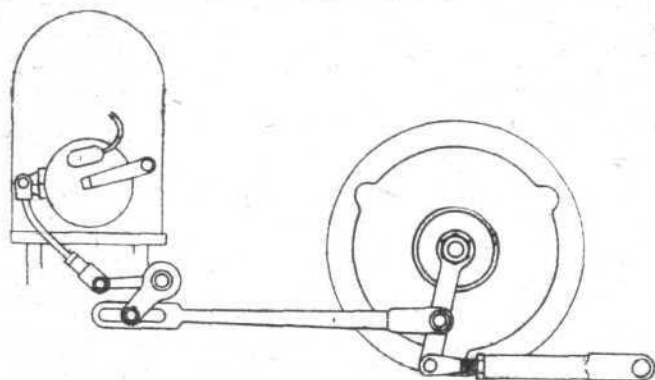


Fig. 28.

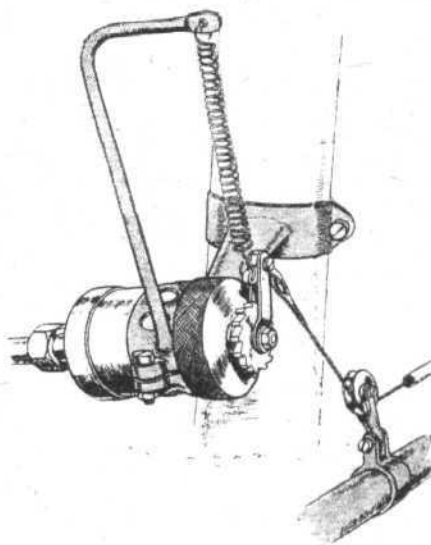


Fig. 29.

a third of the cooling surface. This shutter is fitted with a stop, so that when fully opened it lies in the line of flight of the aeroplane. It is opened or closed according to cir-

a small auxiliary tank, illustrated in Fig. 34. This is furnished with a trumpet shaped vent in the direction of the line of flight, and is furnished with two outlets, one to the head of

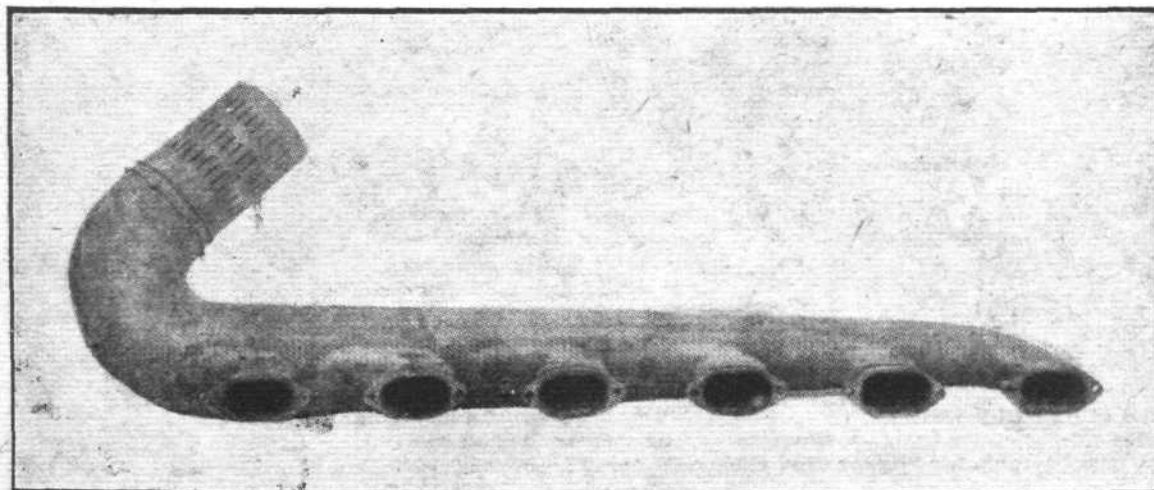


Fig. 30.—The exhaust pipe of the 260 h.p. Mercedes engine.

the main radiator, and the other to the water-pump. The function of this tank is evidently to prevent the pump from priming.

Oil Pump.

The main supply of oil is carried in sumps forming part of the base chamber. A secondary supply of oil, from which a small fresh charge is drawn at every stroke of the oil pump, is contained in a cylindrical tank supported by brackets from the engine struts, and placed immediately behind the

means of a cable enclosed in a system of pipes.

A hand pump is fitted convenient to the pilot, and pressure is normally provided by the pumps installed in

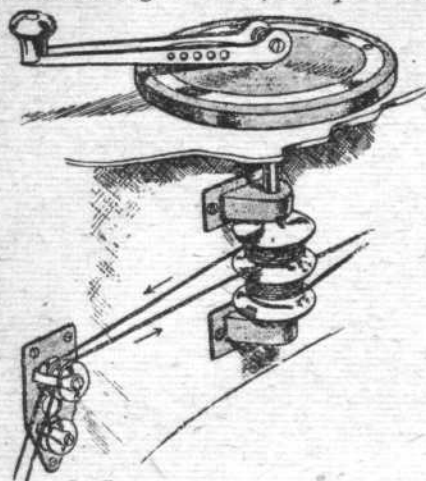


Fig. 31.

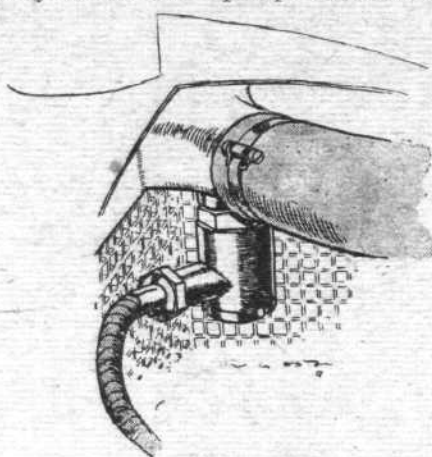


Fig. 32.

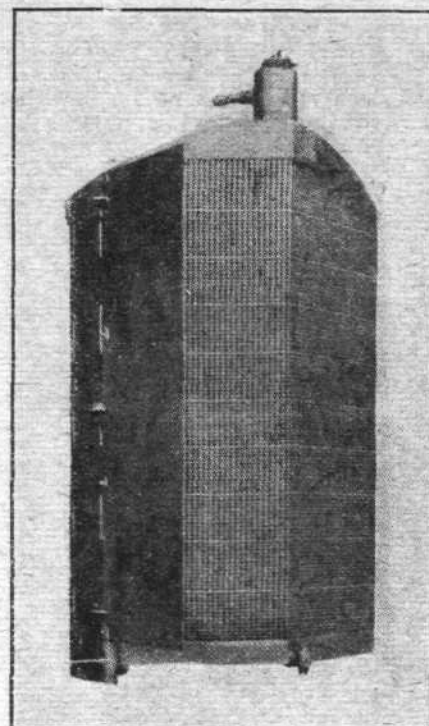


Fig. 33.—Radiator, with shutter open.

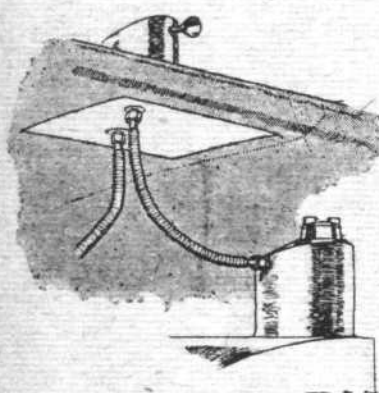


Fig. 34.

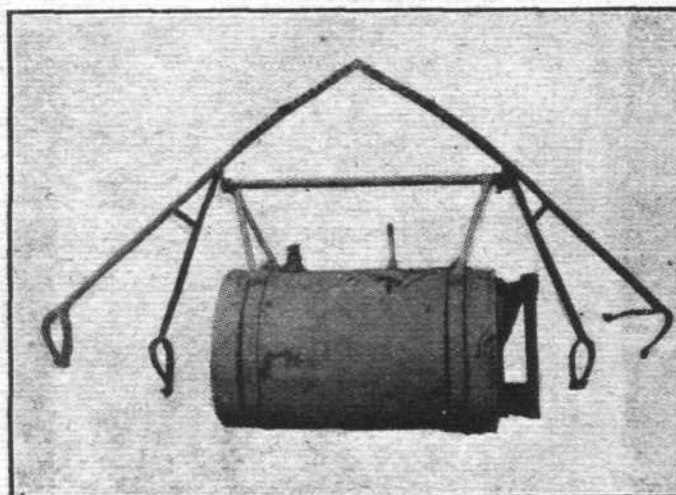


Fig. 35.—Oil tank. This is placed immediately behind the radiator.

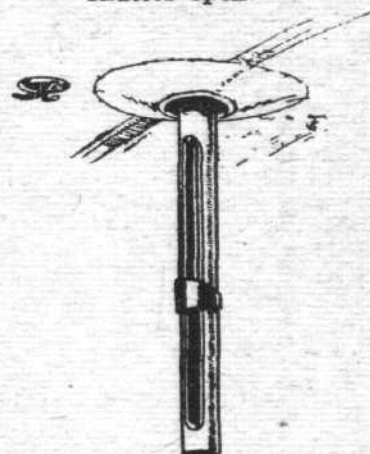


Fig. 36.

radiator. This tank is shown in photograph Fig. 35, and has a capacity of 25 litres = $5\frac{1}{2}$ gallons. Each tank is furnished with a glass level, which is visible from the pilot's seat.

Petrol Tanks.

The two main tanks, which are placed, one under the pilot's seat and the other at the top rear end of the nacelle, contain 270 litres = $59\frac{1}{2}$ gallons each, and are made of brass. Each is provided with a Maximall level indicator, which employs the principle of a float operating a dial by

each engine. An auxiliary tank, holding approximately 13 gallons, is concealed in the upper main plane, not immediately over the nacelle, but a little to the left side. This auxiliary tank is fitted with a level, as shown in Fig. 36, which is visible from the cockpit. The auxiliary tank appears

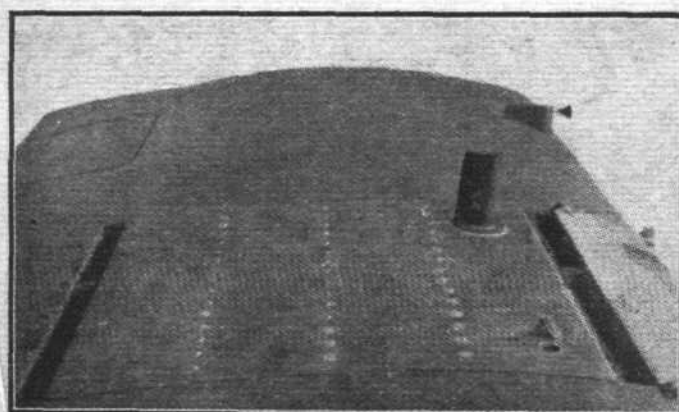


Fig. 37.—Gravity petrol tank let into the centre section of the upper plane. Its fabric cover is held down by press buttons. Note the detachable panel in the trailing edge of the plane.

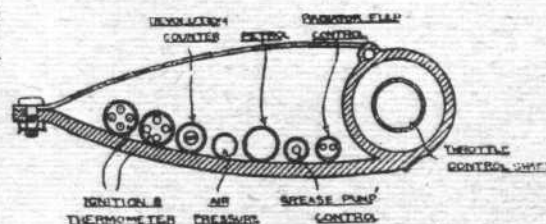


Fig. 38.

to be used only for starting purposes. It is covered with a sheet of fabric held in position by "patent fasteners." A photograph is given in Fig. 37.

Engine Controls.

Running from each engine to the nacelle is a horizontal streamline casing, containing the various engine controls. A section showing the arrangement of these inside the

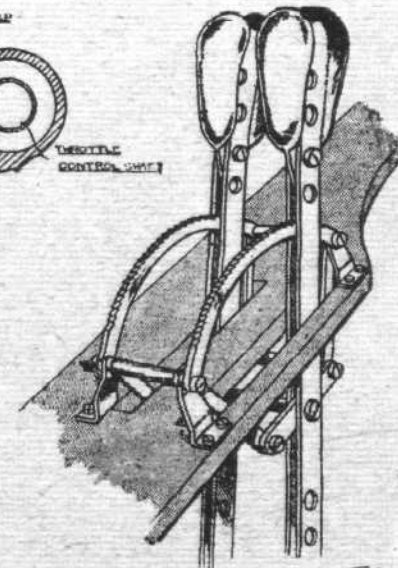
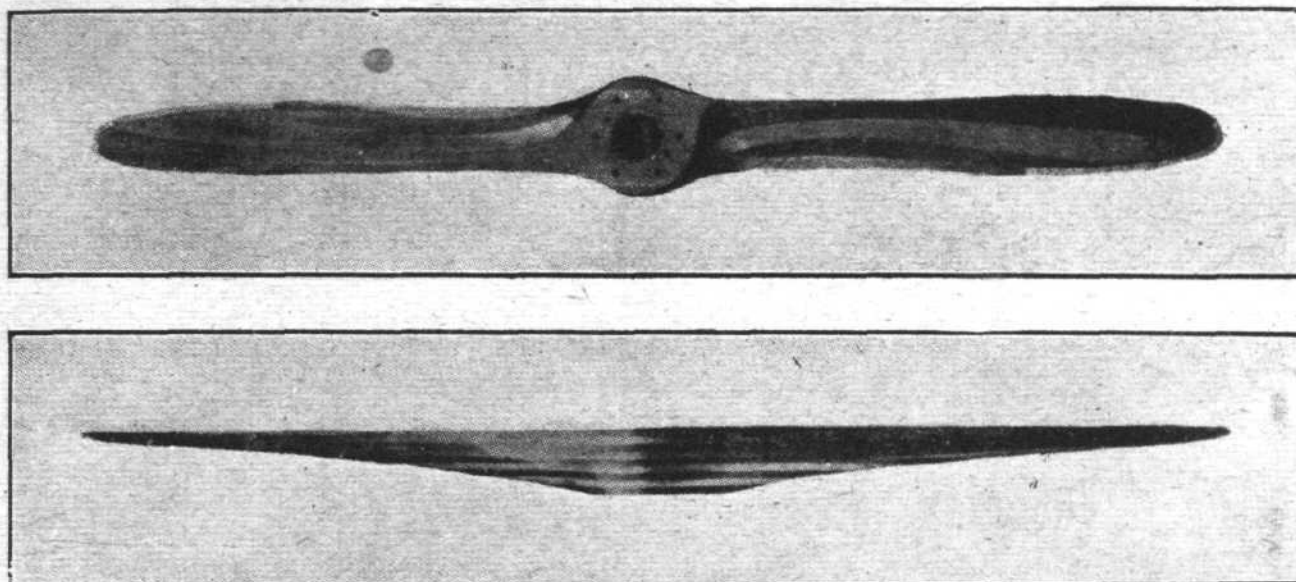


Fig. 39.



Figs. 40 and 41.—Front and side views of the propeller. Note the two additional bolt holes.

fairing is given in the sketch, Fig. 38. The leading edge of the streamline casing consists of a steel tube, to which are welded narrow steel strip brackets, to the rear end of which are bolted thinner strips which are hinged in front to the tube. The whole is then enclosed in a sheet aluminium fairing.

Through the leading tube passes the throttle control rod for each engine, the two throttles being worked either together or independently by the ratchet levers, shown in Fig. 39. These are mounted on a shelf convenient to the pilot's left hand. This control requires a considerable number of bell cranks and countershafts, but was noticeably free from backlash. The throttle is opened by the pilot pulling the levers towards him.

On the dashboard are two revolution counters and two air pressure indicators. The metal parts of these dials are painted red for the left engine and green for the right, and the same colouring applies to the magneto switches, one of which

contains a master switch which applies to both magnetos on both engines.

Piping.

The various systems of piping are distinguished by being painted different colours, thus the petrol pipes are white, arrows being also painted on them to show the direction of flow; air pressure pipes are blue, and pipes for cable controls grey.

Propeller.

The propellers are made by the Luckenwalde Propellerwerke, Niendorf. Each propeller is 3.08 metres in diameter and is made of nine laminations, which are alternately walnut and ash, except one, which appears to be of maple. Photographs, Figs. 40 and 41, show the propeller, which has the last 20 ins. of its blade edged with brass. The pitch is approximately 1.8 metres and the maximum width of the blade 220 mm.

(To be concluded.)

Air Fighting in June.

FROM the official *communiqués* it appears that 1,235 aeroplanes and 94 balloons were destroyed or put out of action during the month of June. This is second only to the figure of 1,248 for May last—the highest monthly figure since the war began.

British aviators claim to have destroyed 295 aeroplanes and driven 133 down out of control, while the anti-aircraft guns brought down one and drove another down out of control. In the same period 117 of our machines were reported missing. Of the total 956 aeroplanes were claimed by the Allies and 278 by the enemy, while of the balloons 57 were destroyed by the Allies and 18 by the Germans.

Alleged British Bomb in Holland.

A DUTCH official telegram says:—"A bomb dropped in open country near Sluis, at midnight on June 11th, without doing any damage of importance, has been found to be of British manufacture, and the Dutch Minister in London has been instructed to protest emphatically against this fresh violation of Dutch territory."

Honour for Escaped "Ace."

The *Petit Journal* announces that the champion cyclist, M. Antoine Paillard, who bombed Essen, lost his way in the fog and was interned in Holland, from which country he escaped, has now again taken his place in a bombing squadron. M. Paillard has been promoted to be an officer, and has been awarded the *Médaille Militaire*.

Germany's Disappearing Champions.

COMMENTING on the heavy losses sustained by the German air service recently Reuter's correspondent on the British front says that of the pilots credited with 20 or more victories, 14, with a total of 363 victories claimed, have been killed or captured. In addition to Capt. von Richthofen, with 80 victories claimed, they include Lieut. Max Muller, with 38; Lieut. von Bulow, with 28; Capt. von Tutschek, with 27; Lieut. Wusthoff, with 27; Lieut. Loetzer, with 24; and many other distinguished pilots.

The German bombing organisations have also sustained heavy losses, among others Capt. Kleine, commander of the so-called "England Squadron," Capt. Weese, and Capt. Koohl have been killed or captured.

Invention in the Army.

AN Army Order states that cases of unauthorised trials and inspections of new inventions have recently been brought to the notice of the Army Council. Every encouragement must be given by superior authorities to officers and soldiers under them to put forward new ideas which may be of military value, and all information of such a nature received from any source should be forwarded through the proper channel to the War Office. But paragraph 1379 of the King's Regulations must in all cases be rigidly adhered to:—

"All inventors suggesting new patterns of military stores or alterations to them are in the first instance to be referred to the War Office. In no case will generals commanding authorise the trial of any invention without first obtaining sanction from the War Office."

Failure to comply with this order often leads to the expression of unreliable opinions concerning existing military equipment. This frequently results in quite unjustifiable dissatisfaction with, and loss of confidence in, such equipment, and is most detrimental to the moral and fighting efficiency of the Army.

An Inventors' Union.

TRADE UNIONISM has taken many callings under its wing, but one of the most unlooked for developments is the formation of an Inventors' Union. It aims at mobilising British inventors to help to win the war, and features of its programme are a visit of a deputation to the front in order to examine problems requiring solution, the employment of successful inventors on a permanent Invention Board and the sharing of poor inventors in funds voted for individual research. The Union pertinently points out that in 1916-17 £285 was paid as rewards to inventors out of a net army cost of five hundred million pounds.

AIRISMS FROM THE FOUR WINDS

THE Secretary of State for Air, as Baron Weir of Eastwood, took his seat in the House of Lords on Tuesday afternoon.

"A SETTLEMENT in the London aircraft factory strike has not been reached, *but negotiations are continuing.*" Ye Gods! and we are at war, and there is a Defence of the Realm Act!

THESE strikes in Munition Works—very much inclusive of aircraft production factories—should be officially and publicly placed on record in the general press, together with full names and addresses of the instigators and those most prominently associated with these Bolsheviki tactics. Then, when later on, the children ask Daddy what *he* did to help the Huns win the war, he can proudly point to the press cuttings—all beautifully and expensively framed without regard to cost out of war-wage profits—adorning the ancestral halls, letting them speak for themselves. That should be a proud moment—each and every time—for both parent and offspring.

POSSIBLY with these full names and addresses some quite interesting information might be forthcoming from outside sources as to origin and associations, past and present. You never know. Hun machinations are winsome, weird and wily.

ST. MICHAEL, the Patron Saint of Airmen, has now a full-blown Guild, which has been initiated by the Cardinal Archbishop of Westminster, with the Rev. A. N. Morgan, St. Michael's Presbytery, Ashford, Middlesex, as its Director. All Catholic airmen of the R.A.F., the Dominions and the U.S.A. are accordingly invited to place themselves under

their Patron Saint's protection by joining the Guild. It is to be hoped those who, for various reasons, do not formally enter the fold are not for all time under a ban.

THE new uniform of the R.A.F. is to be "sky-blue." Hun airmen will make many a bolt from *this* blue! (From "Whipped Topics.")

ACCORDING to Vorwaerts, Herr Scheidemann, in his Reichstag speech, described the bombing of towns by airmen as senseless acts, and said the belligerents must come to some agreement about it.

Why "must" at this hour?

CAPTAIN LAGRIARDIA, a member of the American Flying Corps and of Congress, is also an active member for the Propagation of the Truth in Italy about the All-Liest and his Hun legions. When on this very important missionary work last week at Florence he said: "In a few days the time will have expired when the Kaiser promised his people victory, instead of which he is defeated on the Italian front and his army has been stopped on the Western front. He has quarrels with his own Cabinet, there is hunger in Galicia, and the Jugo-Slavs are breaking away. We can imagine him falling on his knees in his usual blasphemous manner and calling on the Lord, 'Are you no longer my ally?' and the answer which will haunt him to his dying day, 'Yes, but our treaty was only a scrap of paper.'"

THREE thousand South Africans in the Royal Air Force is not such a bad contribution from a Colony which was to be one of the deciding factors, according to German calcula-



PRESENTATION OF AEROPLANES AT BROOKLANDS ON JULY 6TH.—One of the machines presented by the Hon. H. Burton, K.C., a representative of the Union of South Africa, to the R.A.F., and accepted by Major J. L. Baird, Parliamentary Secretary of the R.A.F.

tions, in helping to bring about the complete disintegration of the British Empire! A few more such facts, as given last Saturday by Major J. L. Baird, Parliamentary Secretary to the R.A.F., cannot help but have an enlightening effect upon the German nation as to what must be the ultimate end of the great orgy of selfish slaughter precipitated upon civilisation in 1914 by Prussian militarism.

WHAT an awakening for hereafter—on this earth when peace breaks out—has the running amok of the Hun brought about. Just think of it. Before the war, according to Lord Morris, one-time Prime Minister of Newfoundland, we had a thousand Consuls spread around the world, and of these no less than 900 were Germans! For such shocking shortsightedness we certainly deserved a severe lesson, but hardly so drastic as the present world conflagration has brought about. But if that be so, what of the Huns themselves, who then had practically, the industrial world at their peaceful penetration mercy? And now? Truly the result of the war, however crushing the Allies' victory may eventuate, cannot prove to have been too severe a lesson for such ill-balanced and avaricious ambitions. Anything short of complete annihilation as a people could be deemed other than just retribution for the Hun.

MR. RYAN's plan for the creation of one or more corporations for the purchase, production, manufacture, and sale of aircraft and aircraft equipment and material has been adopted by the U.S. Military Affairs Committee. The appropriation of £20,000,000 proposed for the establishment of a central aeroplane factory is therefore an accomplished fact.

METZ' civil population has, it is authoritatively stated, been evacuated to Luxemburg. This is with little question a direct result of the persistent attentions of the Allies' aircraft. Yet the air-drama has as yet hardly got beyond the opening scene.

CHATHAM Unionists have selected as their prospective Parliamentary Candidate, Col. J. T. C. Moore-Brabazon, R.A.F., one of the pioneers of practical aviation.

FOR the other side Col. Cecil L'Estrange Malone, D.S.O., of the R.A.F., is the prospective Liberal candidate for East Leyton.

"Was ist das für ein ding?" "Das ist ein rotations-dampfmachine!" We have been spending a happy half hour with one of those polyglot technical dictionaries, and the sesquipedalian verbiage which we have set out with pride above is the result of our labours. Rendered into formal English, it reads:—"What's that?" "That's a rotary." Our dictionary is not accented, but any A.M.

could tell you that the stress should come on the middle syllable.

A fine adhesive word, to be used in appealing to the better feelings of taxi-drivers, is "Spitzenblitzableiter"! Repeat slowly after me, please, dwelling on the onomatopoeic beauties thereof: "Spitzen-" (a good spirited opening to attract attention) "blitza-" (the denunciatory or fulminating style), and then to drive all home, "bleiter!" The spelling is exotic, but you will find that you are understood.

By the way, it really means "lightening arrestor with points," though perhaps better calculated to produce disturbances.

AN R.F.C. MECHANIC'S DIARY. By Corporal VEE.

1.2.18.—Promotion list appears in Orders. Candid criticisms from mechanics prove that a man's capabilities vary inversely as he moves to higher rank.

(My capabilities are invariable!)

2.2.18.—Ten recruits arrived from the dépôt. One, named "Willy," said, "Excuse me," and is consequently doomed to be the camp entertainer for at least three months.

3.2.18.—A D.H. 6 was reported by the police for loitering over a village near the aerodrome. The pilot is taking action for slander, as he swears the machine was moving all the time.

4.2.18.—Saw the Pay Sergeant about 8s. 9d. owing to me since last year. He paid me 8s. and said I could keep the 9d. for myself.

Willie was sent to the stores for a rubber spanner!

5.2.18.—Have been reading *John Bull*, and have developed the watching habit.

Watch Dixieland!

Willy has been looking for a silencer on a 100 h.p. mono.

6.2.18.—Been on a smash to-day. All the villagers gathered round, and one sympathetic lady asked if anyone was in the machine when it crashed. The answer was in the negative!

On my return to the aerodrome I found Willy a bit upset as the stores people would not issue a box of sparks to start a R.A.F. (I believe Moses invented this joke when he was running away from the Egyptians.)

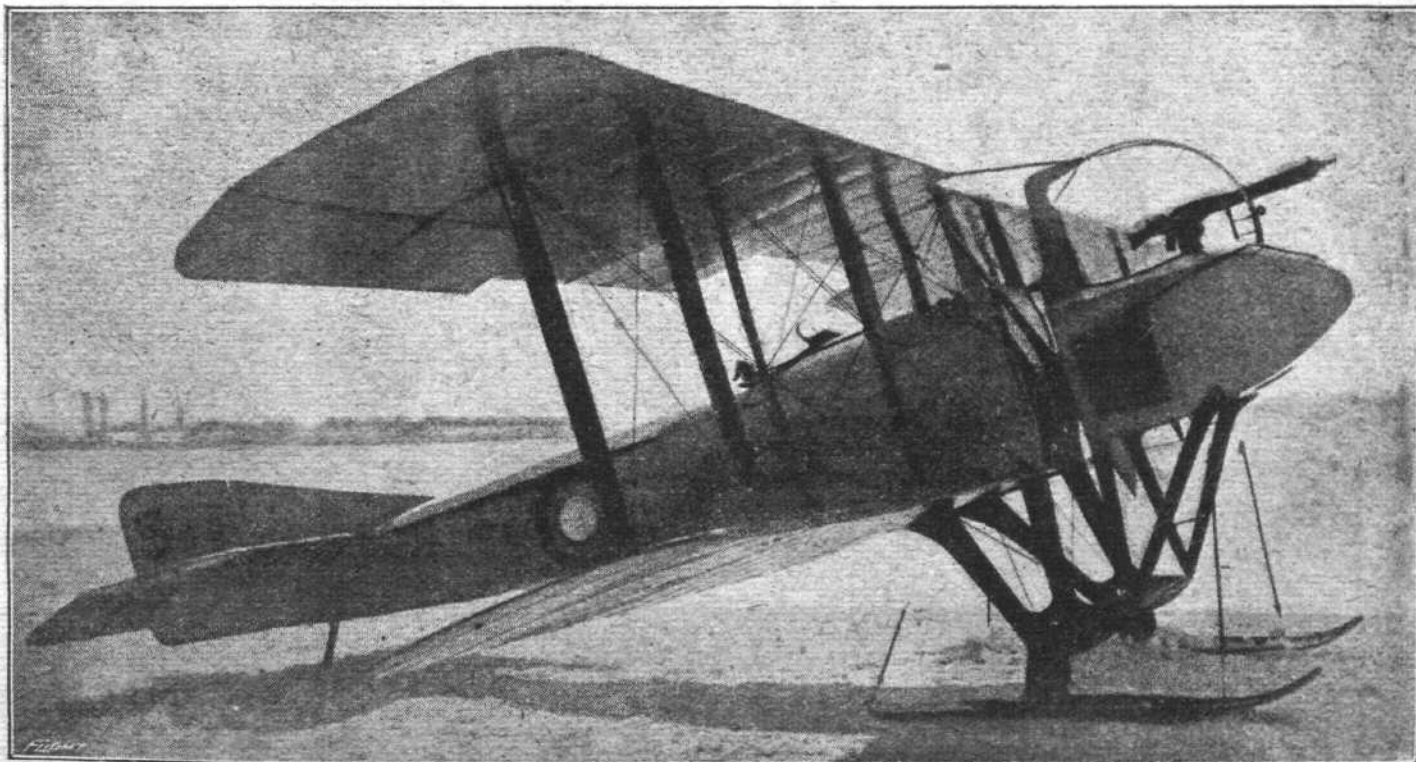
7.2.18.—Lieut. X—"zoomed" while the tail of his machine was still on the ground.

The C.O. borrowed a few words from the Sergt.-Major, and Lieut. X—is Orderly Officer for "duration."

8.2.18.—Helped the Q.M.S. to count the sausages this morning. Tried to slip one in my pocket, but it distinctly said "Neigh!" and galloped back to the stable—I mean table.

Watch Trinidad!

9.2.18.—A number of R.F.A. men visited the aerodrome to-day. An artillery officer gave instructions to his men as



A Ukrainian (formerly Russian) biplane of the Spad biplane type, with the airscrew in the middle of the body. Note should be taken of the special skids for running on snow.

follows:—"This-er-machine is a Sopwith. No!-er-it's an Avro. At least it has "Sopwith" on the propeller and "Avro" on the tail, Sergeant! what is this machine?"

"It's a Havro, Sir!"

Watch Texas!

10.2.18.—Dreamt last night that the war was over, and that I told Captain Z—to fill the blankety 'bus himself, and said "Bogie, bogie!" to the Sergeant-Major.

Have been awarded "Three Days' C.B.," for being late on parade this morning.

Willy has been trying to borrow a glass hammer for tapping wind-screens!

11.2.18.—Have heard rumours to-day that we are going to have new uniforms. The descriptions of the new dress vary, but I've gathered that they are something like this:—An Italian peaked hat, a light grey tunic, red flannelette breeches and fancy brown boots.

The people won't know whether we are a travelling circus or a party of W.A.A.C.s in undress uniform!

12.2.18.—Willy had his first joy-ride to-day. He told us, with trembling lips, and pallid face, that it was "awfully jolly," but he felt a "wee bit sick."

13.2.18.—Am completely "fed-up" to-day. Thought of asking for a transfer, but was afraid the C.O. might grant it.

One of the lady clerks absent. She added up the flying times correctly yesterday, and has not yet recovered from the shock.

14.2.18.—Lieut. G—landed in a tree this morning. One of the instructors wishing to put him at ease, remarked, "Hullo! had a smash?" Lieut. G—, clambering from the tree and stuttering, replied: "N-n-o, you — fool, I er—er—always l-l-land like this!"

Lieut. G— will not be promoted just yet.

Willy has been greasing the wing tips, to prevent the machines from sticking to the clouds.

15.2.18.—Our very latest Scout landed to-day. Went to see it "get off"—but got an eye full of dust, and by the time I had picked my hat up, a telephone message arrived to say it had reached its own aerodrome fifty miles away.

Watch Tooting!

16.2.18.—Had another interview with the Pay Sergeant, as I heard I was 10s. in credit. He has put me 15s. in debt to cover it. I think we shall win!

Willy is working on an automatic device for the preservation of pilots' lives.

17.2.18.—An air-raid last night. (It wasn't really last night—but that's camouflage. You won't catch me giving secrets away to the enemy!)

There were no bombs dropped here, but the gunners at —(Guess!) made excellent practice. They dropped a shell just twenty yards from our mess-room, which proves that they knew what they were shooting at.

18.2.18.—I believe our Squadron will become civilised soon.

There's Willy, five lady drivers, eleven Waacs, and the Sergeant-Major (Capital Letters, please!). If they cannot tame us all hope may as well be abandoned.

Watch Manchester United!

19.2.18.—Willy's apparatus is finished. It is to be fixed on the dash-board in front of the pilot's seat.

If some of the cylinders blow out a red light is shown; if the machine side-slips out of control, the apparatus shows a green light, and a pointer indicates which way the machine is falling; and if the tail falls off, the device rings a bell, and fires a Very light to warn people underneath to stand clear!

20.2.18.—One of our lady drivers got to hear in a round-about way, that it is a good thing to clean the plugs. After a struggle she removed the plugs from the cylinders, and then applied to the sergeant in charge for some soap and hot water! I believe she obtained the "hot water," but he was out of plug-soap. However, she is endeavouring to rectify matters by a frequent use of soft soap!

21.2.18.—Have received private information that, as a mechanic, I am splendid, and I should be promoted if,—(1) My moustache was not so long, (2) My manner was more forcible, and (3) My feet conformed more efficiently to regimental ideas. I've a fair share of ambition, so I've shaved my moustache completely off, my attributive vocabulary is surpassing an Aldgate paper boy's; but my feet will imitate the clock when the hands show ten-past-nine!

22.2.18.—We are developing strong traces of economy in this squadron. A certain job used to be done by a 1st A.M., and three of the other kind, to save money and to use the men's labour more efficiently. The same work is now done by a "1st," a "2nd," and a "3rd" and six women. In addition a lorry driver and his second man are employed to fetch the women and take them back.

Nevertheless, I still think we shall win.

Watch your step!

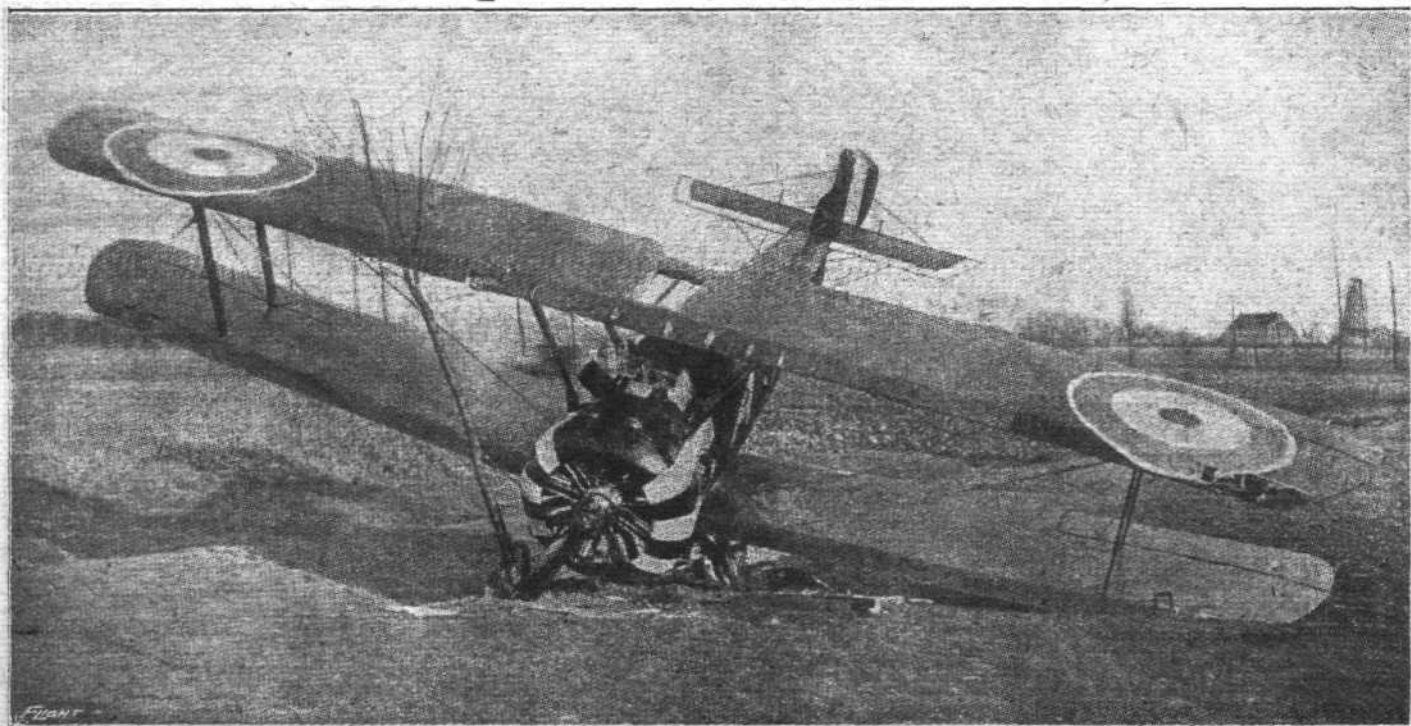
23.2.18.—Do you remember reading about that ox which Noah's wife taught to sit on its hind legs and beg for a sugar ticket? Yes? Well, we had it for dinner to-day. It gave itself up, as it wanted to do "its bit" for the troops. The troops "bit" but couldn't do it!

The squadron shoemaker has gone into hospital with a broken heart.

24.2.18.—We have a very lucid flight sergeant, who clears up misunderstandings in a clear and succinct manner.

He explained the theory of flight to me to-day, something as follows:—

"If the different forces acting on a machine in flight are known to be what they are, and if the negative lift plus the positive lift are together greater than gravity, consequently knowing that these forces are acting in conjunction or else in opposition, and taking into account the fact that if the stagger is greater or smaller than it ought to be therefore the drift will be greater or smaller than it is; consequently the machine



A Sopwith single-seater fighter shot down in an aerial fight on the Western Front. Note the peculiar painting on the engine cowl and the two fixed machine guns.

will fly or not fly according to whether the thrust of the propeller is greater or less than these forces taken in conjunction or one after the other!"

This is perfectly clear, and should be learnt by heart by all who are interested.

25.2.18.—Found a piece of a rubber tyre in my sausage this morning—which helps to prove that the motor car is replacing the horse in every direction.

26.2.18.—Have lost several good civilian friends this evening, as I washed my tunic in acetone!

Am afraid they have not kept pace with modern developments, as my technical explanations had no effect.

27.2.18.—The real meaning of an elusive answer was demonstrated to me to-day.

I was in charge of the guard, when a prisoner, under escort, was brought in and charged with being "drunk and disorderly."

The Orderly Officer asked him how much he had to drink.

"Only a couple of glasses, Sir."

"What! A couple?"

"Well, Sir, a couple as I calls a couple!"

Undoubtedly a flying man's notion of "a couple" is very airy!

28.2.18.—A "first soloist" has marked the end of the month

AVIATION IN PARLIAMENT.

Aircraft Insurance (Government Scheme).

Mr. Warr in the House of Commons on July 3rd asked the President of the Board of Trade whether there is a surplus at the present moment of the Aircraft Insurance Fund; if so, how much it is; and why claims on the fund by insurers are so contested by his Department; and are the *ex-gratia* allowances up to £500 paid to persons who pay no premiums, kept in a separate account from the amounts paid to those who have duly paid their premiums?

Sir A. Stanley: It is not in the public interest at present to publish figures relating to the Government insurance scheme. The payments made under the air-raid compensation scheme are paid out of a separate account. If the hon. member can furnish particulars of any cases in which he thinks claims under the insurance scheme have been unreasonably contested I will have them investigated.

The Supply of Flax (Flax Companies (Financial Assistance) Bill).

On the second reading of the Flax Companies (Financial Assistance) Bill on July 3rd,

The Financial Secretary to the War Office (Mr. Forster): Owing to the enormous demand for flax for the War Office, Admiralty, and aeroplane requirements, and the loss of the Russian and Belgian crops, which, of course, are no longer available as the area from which we have obtained our supplies, it has become essential to make a very large development of flax production within the Empire. Part of the effort we are making for earlier production is in Ireland. Arrangements have been made for a very considerable extension of flax-growing there. The banks are willing to advance the necessary money under guarantee in part by the linen industry and in part by the War Office with the consent of the Treasury. Some difficulty has arisen owing to the fact that the companies who are willing to undertake the liability strictly have no power to do so under the terms of their articles of association or instruments of incorporation. The object of this Bill is to give them the power which they do not at present possess. They could, of course, go to the Courts in the ordinary way and get an amendment of their articles of association, but it was thought fair that as we have done in the case of the munition companies so we should do in the case of these companies—that is to say, give them power by Statute without imposing upon them the obligation to go to the Courts. This Bill imposes no obligation upon anybody, but enables those willing to do so to come to the assistance of the country in the provision of a very vital commodity. That is the object of the Bill, and I hope the House will give it a Second Reading.

Mr. C. Roberts: Naturally we understand there are very important objects of national importance which this Bill seeks to carry out; but I should rather like to hear what guarantee the War Office is to give. I refer to the estimated amount. If it cannot be given now, perhaps it can at a later time. I am dependent upon the explanation which has been given by the hon. gentleman of the Bill, as I have studied it but briefly; but it does seem to me that the Bill is drafted in singularly wide terms. It suggests that practically any company, whatever its shareholders may say, may depart from its articles of association and do a number of things which the shareholders have not sanctioned. That may be all right in the case of the individual companies to which reference has been made, but, as I say, the Bill is drafted in very wide terms, and it seems to me that it may require some little study and some closer drafting with a view to preventing difficulties which conceivably may arise.

Mr. Booth: I have studied the Bill somewhat, and I certainly think there should be a safeguard in it. It not only enables a company to go behind its prospectus, but also outside its memorandum. There are many people who have invested in a company and who rely upon its memorandum to limit it, say, to banking, or insurance, or cotton, or coal, as the case may be, and they would not have the least idea that the directors by a resolution at a meeting could embark to any extent they like upon an enterprise of the sort referred to. I should like to make the suggestion, which I hope the Government will not consider unreasonable, that those concerned should have to apply to some Government Department before they can act, say to the Board of Trade. As a matter of fact most companies can, by means of their board, exercise all the powers of the company, but here you are going to give them some reason to break all their conditions and all their bonds in order to invest in flax. There should be some form or some check; they should have the consent of the Board of Trade or the Home Office; they should have to take some definite act, however moderate, whereby some independent person casts his eye over the proposed transaction, and such, I think, would avoid any possible trouble, in view of this unlimited power.

Sir C. Bathurst: I also would like to press the right hon. gentleman the Financial Secretary to give us some idea as to the extent of the guarantee for which, of course, this House is primarily responsible. I should also like to ask him whether this scheme contemplates growing flax alone in Ireland, which, of course, possesses a climate and certain facilities in the way of waterways which are peculiarly suitable both for the growing and milling of flax, or whether it is proposed to have considerable areas of flax growing in England and Wales. In connection with this question I should also like to ask whether it is proposed that a portion, at any rate, of this flax is to be grown with a view to the provision of linseed, which is one of the scarcest commodities in this country? We require a very large area for carrying our stocks through the winter months. I venture to hope that the right hon. gentleman has that in mind, because no doubt he is aware there is no matter upon which the farming community is to-day more anxious than as to whether concentrated foods will be available for carrying the cattle and the sheep through the winter months, and in the succeeding

by landing a "Quirk" in the hangar. The mechanics appreciate his kind endeavour to save them work, but the Flight Commander seemed a bit annoyed—jealousy, I expect, because it isn't every pilot who can smash four machines in one landing.

TEN YEARS AGO.

Excerpts from the "Auto." ("FLIGHT's" precursor and sister journal) of July, 1908. "FLIGHT" was founded at the latter end of 1908.

THE ZEPPELIN AIRSHIP.

The Zeppelin airship succeeded in establishing an important record of a 12-hour flight on July 1st.

THE BROTHERS WRIGHT.

A contract has been entered into between the Brothers Wright and a Committee, represented by M. Lazar Weiller, to the effect that the Wrights will receive a sum of 500,000 francs on the condition that they execute a 50-kilom. flight in a closed circuit with a machine carrying two passengers on some day which is convenient to themselves, and follow this flight up with another on any day indicated by the Committee during the following eight. Should any other aviator succeed in making a similar performance during the following four months, the contract is to be void.

years. If agriculturists have the assurance that there will be a considerable increase of home-grown linseed, and therefore of home manufacture of linseed cake, it will make the Bill popular amongst the agricultural community.

Mr. Forster: The guarantee for the scheme which is in contemplation is £600,000 guaranteed by the War Office, and £200,000 guaranteed by the linen industry. I think we may hope that no portion of the guarantee will be called up, but it is contingent upon the success or the failure of the crop. It is essential that every effort should be made to promote this system of flax-growing. In regard to the observations made by the hon. member for Pontefract and the hon. gentleman opposite (Mr. C. Roberts), there is perhaps some desirability that the Bill should not be too widely drawn. I shall certainly consider that point between now and the Committee stage, and, if I can meet them, I shall be very glad to do so.

Mr. Watt: Will the right hon. gentleman tell us in what way that guarantee will be called upon? Will it take the form of taking shares in the undertaking, or in certain contingencies, if loss arises, will the country be called upon to meet that loss?

Mr. Forster: The actual money will be advanced by the banks under guarantee as to part of it, on the liability of the War Office, and as to the other part on the liability of the linen industry. In regard to the point made by my hon. friend behind me (Sir C. Bathurst), certainly I hope that the supply of linseed will be enlarged. All of us personally are concerned, and, as an agriculturist, I am just as much concerned as my hon. and gallant friend in regard to this matter. The object we have in view is the production of flax, largely for the purpose of aeroplane manufacture, and largely for those canvas requirements of the War Office.

The Bill was read a second time, and committed to a Committee of the Whole House.

Gift of Aeroplanes to Chilean Government.

Sir J. BUTCHER asked the Secretary of State for Foreign Affairs under what circumstances a number of aeroplanes are being supplied from this country to the Chilean Government, and whether the action of His Majesty's Government in furnishing these machines to Chile is not calculated to arouse apprehension in other Latin-American Republics?

Lord R. Cecil: The facts referred to in the first part of my hon. friend's question may be easily stated. Our Admiralty were anxious to obtain a Chilean battle cruiser building in this country. The Chilean Government assented in the most courteous and obliging manner to the surrender of the vessel. But they pointed out that their action had the inevitable effect of disorganising their whole naval programme and effecting an important reduction in their naval strength. For this no payment based on the cost of the ship could afford full compensation, and they suggested that the gift by His Majesty's Government of a few aeroplanes, in addition to the money price, would be gratefully received. We were glad to meet their wishes. I am sure that my hon. friend will agree with me that the opinion hinted at in the last part of the question has not any solid foundation. In the first place, the effect of the whole transaction, consisting as it does of the gain by Chile of a few aeroplanes, and the loss by Chile of a battle cruiser, can hardly cause alarm in any of Chile's neighbours. In the second place, I hope and believe that public opinion among the great republics of South America has reached a stage which will make it utterly repugnant to them to settle disputed questions by a resort to war.

Financial Assistance for Flax Companies.

Mr. LEIF JONES asked the Financial Secretary to the War Office whether, in view of his statement that the War Office, with the consent of the Treasury, are guaranteeing the bank against loss in connection with any advances they may make under the Flax Companies (Financial Assistance) Bill, it is intended to embody in the Bill the terms of the guarantee, and whether, as this guarantee imposes upon the people a contingent liability, it is intended to pass a Financial Resolution in Committee of Ways and Means sanctioning this charge upon the people?

Mr. Forster: No, sir; the Bill in question refers only to the guarantee given by the companies and corporations. The liability undertaken by the Government will be covered by another Bill, which will be founded on a Resolution passed in Committee of Ways and Means.

Mr. Jones: Does my right hon. friend realise that the title of the Bill is misleading, because it is to enable companies and other bodies to give financial assistance to flax companies, and that there is nothing to show that financial responsibility for advances to the flax companies will rest upon the Exchequer?

Mr. Forster: It is a self-contained part of the scheme. The scheme is divided into two parts—the part undertaken by the Government, and the part undertaken by the companies and corporations—and the contingent liability incurred by the Government will be dealt with in a separate Bill.

Mr. Jones: May we rely upon it that this guarantee will not be made binding until this House passes a Bill for the purpose founded on a Resolution in Committee of Ways and Means?

Mr. Forster: It will be founded on a financial resolution in Committee of Ways and Means.

Mr. Holt: Am I to understand from the right hon. gentleman that the Vote of Credit will not be used for the Government guarantee?

Mr. Forster: The actual moneys that are payable will probably come out of the Exchequer, but the authority of this House will be given to the transaction by means of a Bill founded on a financial resolution.

Personals.

Casualties.

Lieutenant **RAYMOND S. BURCH**, R.A.F., who was killed in action on June 28th, aged 27, was the eldest son of the late Dr. G. J. Burch, F.R.S.

Captain **WILLIAM GEOFFREY CHAMBERS**, Lincolnshire Regt. attached R.A.F., who was killed while flying abroad on May 15th, aged 22, was the second son of Mr. T. W. S. Chambers, grandson of the late Sir Thomas Chambers, Q.C., M.P., and nephew of Lady Southwark and Lady Roxburgh, C.B.E.

Major **ERNEST WILLIS**, R.A.F., who was killed on July 1st whilst on active service, aged 34, was the youngest son of the late David Willis, of Garbrand Hall, Ewell, Surrey.

JOHN HILLIER BLOUNT, who died on July 6th as the result of a flying accident, was the son of the late Major C. H. Blount, R.A., and Mrs. Blount, Wadgate Cottage, Felixstowe.

Lieut. **RAYMOND COAPE-ARNOLD**, R.A.F., who was killed in an aeroplane accident, was the youngest son of Mr. and Mrs. Coape-Arnold, of Wolvey Hall, Hinckley, and was 26 years of age. He was born at Wolvey Hall, and after leaving college at Dumfries, travelled a good deal, visiting Canada, South Africa, and other countries. On the outbreak of war he joined the South Staffordshire Regiment, and obtained a commission in November, 1915, after service in France. Lieut. Arnold joined the Air Force a year ago after recovering from an illness.

Lieut. **JOHN HERBERT PATERSON**, Indian Cavalry, I.A.R. of O., attached R.A.F., who was accidentally killed while flying abroad, on June 21st, aged 25, was the eldest son of John Paterson and Mrs. Paterson, of Shalimar, Beckenham, Kent.

Second Lieutenant **WILFRED WALTER POLLARD**, R.A.F. who died on July 5th in R.A.F. Hospital, aged 19, was the only son of Dr. and Mrs. W. H. Pollard, of Hagley Road, Birmingham.

Lieutenant **NIGEL BERNARD WHITFIELD**, Yeomanry, attached R.A.F., who died on July 7th as the result of an accident whilst flying was the younger son of Mr. and Mrs. T. Stanley Whitfield, of Forest Row, Sussex. His age was 27.

Married.

Captain **ALFRED D. BATEMAN**, R.A.F., only son of Mr. and Mrs. David Bateman, Bellingham Road, S.E., was married on July 4th at South Street Baptist Church, Greenwich, to **ETHEL MAY**, only daughter of Mr. and Mrs. James Watt, of "Alford," Bromley Road, Catford.

Lieut. **DONALD FRASER BURTON**, Suffolk Regiment, attached R.A.F., younger son of S. H. Burton, M.B., F.R.C.S., Eng., of 49, S. Giles Street, Norwich, was married on July 6th at Brompton Parish Church, to **AILEEN**, younger daughter of the late W. J. TYLER-COVE, of Langwathby, Cumberland.

Lieutenant **ALEXANDER NOEL DAVID**, R.A.F., only son of Mr. Alexander J. David, K.C., and Mrs. David, was married on July 2nd at St. Mary's Church, Holly Place, Hampstead, to **VIOLET NORA**, elder daughter of Mr. and Mrs. John Gregory Jones, of 2, Parsifal Road, Hampstead.

Lieutenant **HUGO J. DUNCAN**, M.C., was married on July 1st, at Glasgow, to **JEAN CRAIG**, daughter of Neil Mackechnie, Esq., F.E.I.S., Coatbridge.

Lieutenant **WILLIAM SPURRETT FIELDING-JOHNSON**, M.C., Yeomanry, attached R.A.F., younger son of Thomas Fielding-Johnson, J.P., of Goscote Hall, Leicester, was married on July 2nd, at St. James's, Piccadilly, to **GWENDOLEN EDITH WHETSTONE**, daughter of the late Walter Whetstone, of Knighton, Leicester and of Lady Hiley, of Beechfield, Edgbaston.

Lieutenant **ELMER COLIN GOLDSWORTHY**, R.A.F., Pacific Grove, California, U.S.A., was married on July 2nd, at Ballymore Church, to **C. A. BRIGHT DONOVAN**, V.A.D., eldest daughter of the late Richard Donovan, D.L., and Mrs. Donovan, Ballymore, Camoline, Co. Wexford.

Lieutenant and Commander **MONTAGUE GRAHAME-WHITE**, R.N.V.R., eldest son of the late John Grahame-White, of Bursledon Towers, Hants, and Mrs. Grahame-White, of Fair-

holme, Faygate, Sussex, was married on July 1st, at St. Mary's Church, Hook, Hants, to **ANNIE LOUISE**, daughter of the late Charles Morris-Watkins, of the Bank of England.

Lieutenant **ERIC HEFFER**, R.A.F., only son of Mr. P. H. Heffer, Everdene, Watford, was married on July 9th at All Saints, Margaret Street, W., to **AGNES**, daughter of Mr. J. C. Williamson, 3, Palace Houses.

Lieutenant **NORMAN MOON**, Hussars, attached R.A.F., of Willaston, Chester, son of Mr. and Mrs. James Moon, was married on July 3rd at Christ Church, Lancaster Gate, to **MARY FLORENCE**, second daughter of Sir Henry and Lady Robertson, of Pale, Corwen.

Major **R. H. C. ROUTLEY**, Royal Fusiliers, attached R.A.F., was married on July 9th at the Chapel Royal, Savoy, to Miss M. SYLVIA GROOM.

Lieut. **A. J. THOMAS**, R.A.F., and **ELLA DOROTHEA COURT LE PATOUREL**, daughter of the late Paul B. Le Patourel, Calcutta, were married on July 9th. at Brompton Oratory.

Second Lieutenant **ERIC D. TRASK**, R.A.F., only son of the late Mr. W. Trask and Mrs. Trask, of London, was married on July 5th at Doddridge Chapel, Northampton, to **ELSIE S. ROBINSON**, elder daughter of Mr. and Mrs. J. P. Robinson, of Northampton.

REGINALD TRELAWEY WICKHAM, R.A.F., second son of the Rev. A. P. Wickham, of East Brent Vicarage, Somerset, and of the late Mrs. Emily Helena Macpherson Wickham, was married on July 6th at St. Mary's Church, Harrow-on-the-Hill, to **MARY OLIVER**, younger daughter of the late Rev. **WILLIAM VASSALL**, and of Mrs. VASSALL, of Aisholt, Somerset.

Major **OLIVER VILLIERS**, D.S.O., R.A.F., son of the late Rev. H. M. Villiers and of Mrs. Villiers, was married on July 6th to Miss **AILEEN JUDITH HEBER-PERCY**, second daughter of the Rev. and Mrs. H. V. Heber-Percy, of Leasingham Rectory, Sleaford, Lincolnshire, at St. Paul's Church, Knightsbridge.

To be Married.

The engagement is announced between Lieutenant **HARRY WATSON DURTNELL**, R.A.F., eldest son of Mr. and Mrs. Harry Durtnell, Sevenoaks, Kent, and **EVELINE ADELA**, youngest daughter of the late George East, of Curzon Street, and Mrs. East, of 1, Southwell Gardens, S.W.

The engagement is announced between Captain **GEOFFREY TERENCE ROLAND HILL**, M.C., R.A.F., second son of Professor M. J. M. Hill, M.A., D.Sc., LL.D., F.R.S., and Mrs. Hill, of 18, Ferncroft Avenue, Hampstead, London, N.W., and **MARY (MAY) ANNA CATHERINE LOETITIA**, second daughter of the late Colonel Charles Murray Alexander, and Mrs. Alexander, of Termon, Carrickmore, Co. Tyrone.

An engagement is announced between Lieutenant-Colonel **F. F. MINCHIN**, D.S.O., M.C., R.A.F., second son of Major-General F. F. Minchin, C.B., and the late Margery Minchin, of Armagh, Co. Tipperary, Ireland, and Holywell House, Bishop's Waltham, Hampshire, and **MARGARITA BEATRICE (RITA)**, only daughter of Mr. and Mrs. White, of The Poplars, Maidstone.

The marriage arranged between Capt. **WILLIAM VAZIE SIMONS**, R.A.F., son of the late Professor W. Vazie Simons and grandson of the late Henry Winfield Hora, deputy of the City of London, and Miss **MADELINE MARY GROSS**, second daughter of H. Livingstone Gross, Esq., and Mrs. Gross of Normanhurst, Hermon Hill, South Woodford, Essex, will take place quietly at South Woodford Church on Wednesday, Aug. 7th, at 1.30 p.m. There will be no reception.

A marriage has been arranged, and will shortly take place between **NIGEL BERNARD WHITFIELD**, R.A.F., younger son of Mr. and Mrs. T. Stanley Whitfield, of Forest Row, and **GLADYS**, only child of Mrs. **PODMORE CLARK**, of 65, Queenborough Terrace, Hyde Park.

A marriage has been arranged, and will shortly take place, between Lieut. **WILLIAM BARTLETT YOUNG**, R.A.F., son of Mr. R. R. Young, of Dennington, Victoria, Australia, and **DOROTHY KATE**, youngest daughter of Mr. and Mrs. W. R. Butt, of Redland, Bristol.

THE FLIGHT OF AN AEROPLANE AT DIFFERENT ALTITUDES.

By LOUIS DE BAZILLAC, Ingenieur (École Supérieure d'Aéronautique de Paris).

Translated by B. BRUCE-WALKER, B.Sc.

(Continued from page 652.)

We have before us then two ways of flying the aeroplane under the thrust of contact if account is taken of the lightening due to the consumption of petrol.

The first consists of flying at a constant speed and increasing altitude, with the engine running all the time at its normal speed.

The second consists of keeping the altitude constant by following the parabola OBD, that is to say, by reducing the speed of the engine in the proportion in which the oil and petrol are consumed.

The first is faster than the second, but leads to high altitudes. The altitude Z attained at the end of the journey is given by the formula:—

$$N = \frac{1}{\mu} = \frac{W}{W - C}$$

C being the weight of the petrol and oil consumed,

$$\text{whence } Z = 60,370 \log \frac{W}{W - C}$$

To sum up, if we wish to beat the height record we should build the aeroplane that gives the minimum of resistance and the minimum of weight and place therein the most powerful engine and the propeller of the best efficiency.

If we wish to beat the vertical speed record, we must satisfy the preceding conditions, take for the start the horizontal speed V for which $H - R = AB$ is a maximum, and preserve the angle of attack corresponding to this speed until reaching the speed V_m , which will be the horizontal speed of maximum altitude.

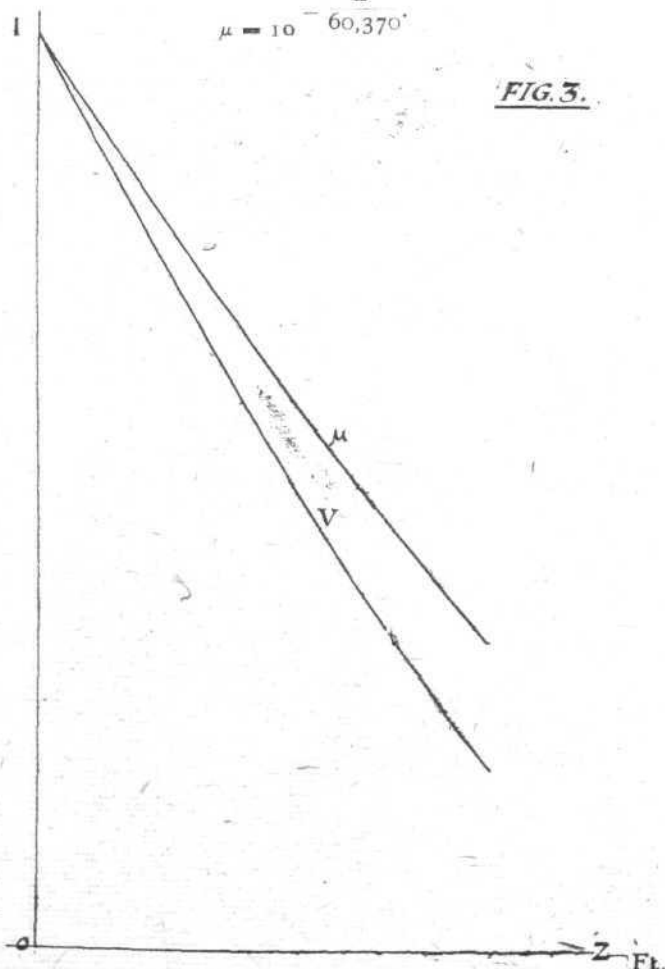
If we wish to accomplish a raid at a distance we should do the manoeuvre with the minimum consumption of petrol; for this we would fly at the thrust of contact at constant speed and at a constant altitude, or alternatively we could commence the journey at an increasing altitude and finish it at a constant altitude.

If we wish to beat the horizontal speed record we ought to work at ground level.

NOTE I.—The formula $Z = 60,370 \log \frac{1}{\mu}$ can be written as a function of Z :—

$$\mu = 10^{-\frac{Z}{60,370}}$$

FIG. 3.



Suppose that the function μ only concerns the aeroplane and that the thrust of the propeller is proportional to a function not equal to μ (Fig. 3).

$$\text{Let } \nu = 10^{-\frac{Z}{C}}$$

this function, C being a constant other than 60,370.

If ν is less than μ , the locus of the points corresponding to the maximum speeds is curve 1 (Fig. 2).

If $\nu = \mu$ it is curve 2, already considered, higher up.

If ν is greater than μ it is curve 3.

In the limit, if $\nu = 1$ a constant, the locus of the points corresponding to the maximum speeds is curve 4.

From this will be seen how important it will be to feed the engine with oxygen in such a way as to keep the explosive value of the gaseous mixture or the power of the engine as constant as possible as one climbs higher. The maximum horizontal speed is then greater at a high altitude than at a low one.

NOTE II.—We have decided that to realise flight with the minimum of fuel it is necessary to keep to the thrust of contact.

In fact if H is the thrust of the screw and V the speed of translation, to traverse a distance s the duration of the journey will be $\frac{s}{V}$; as the work of propulsion is equal to HV , the

consumption of petrol will be proportional to $HV \times \frac{s}{V}$, that is to H .

As a consequence, for equal distance covered, the consumption of petrol will be as much less as H is smaller. This result will be attained when the aeroplane flies at the speed V corresponding to the minimum of the curve of R .

The consumption of fuel per unit of time, C , is as a matter of fact proportional to the power Π of the engine:—

$$C = K\Pi$$

K being a coefficient depending on the engine.

The total consumption for a flight of duration t will thus be:—

$$C = K\Pi t$$

t can be expressed in terms of the distance covered s and the resultant speed U of the machine, which depends on the speed of the wind W and on the speed V .

$$\text{We have then: } t = \frac{s}{U}$$

$$\text{whence } C = \frac{K\Pi s}{U}$$

Let ϕ be the angle that W makes with the direction of the flight path of the machine (Fig. 4), W , the component of

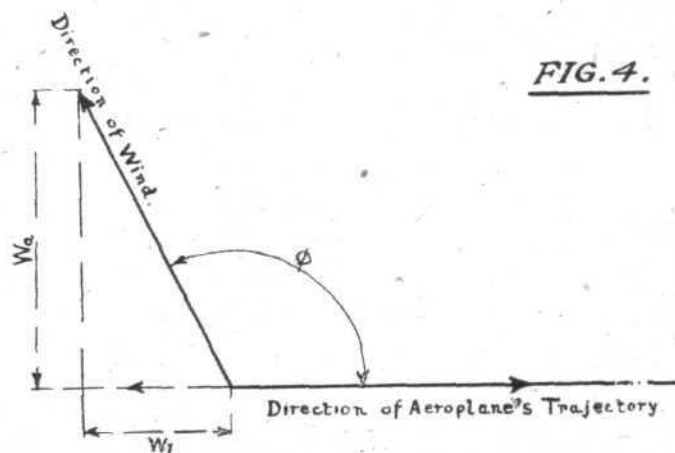


FIG. 4.

the wind in the direction of the flight path, and W_2 the component at right angles.

Starting from the point O , the origin of the system of rectangular co-ordinates XY , mark off on the axis of Y on the negative side the component $W_2 = OB$, and on the axis of X the component $W_1 = OA$ (Fig. 5). From the point B draw a fan of straight lines representing different velocities V , and at the points where these lines cut the axis of X , raise ordinates proportional to the powers required. If from the point A we take a tangent to the curve of powers Π , so obtained, the straight line BC corresponding to the point

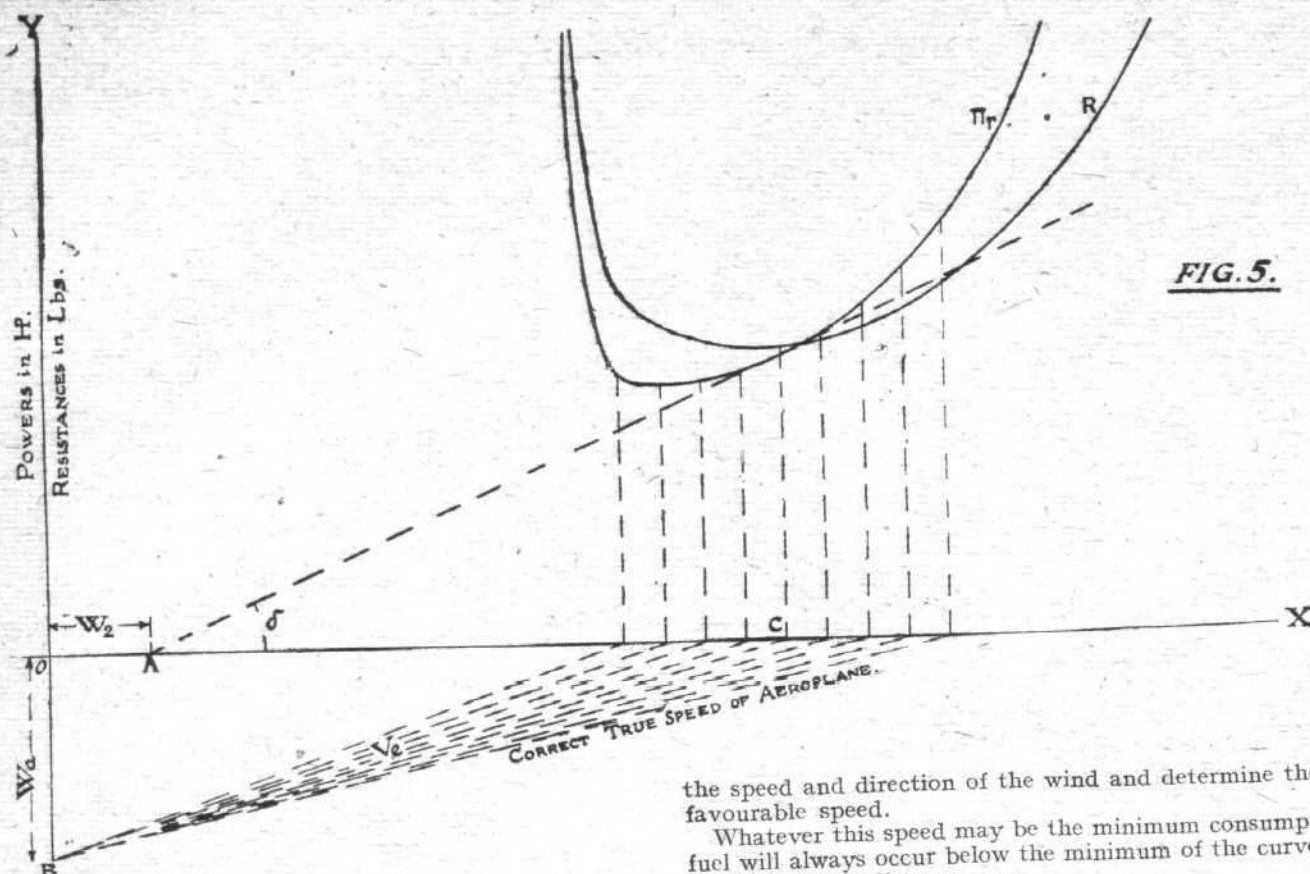


FIG. 5.

of contact D of this tangent represents the required speed corresponding to minimum consumption.
We know as a fact that the expression

$$C = Ks \left(\frac{\Pi_r}{U} \right)$$

must be a minimum. The numerator Π_r is represented by the straight line DC, the denominator U by AC, and

$$C = Ks \left(\frac{DC}{AC} \right) = \text{constant} \times \tan \delta.$$


For fuel the consumption, to be a minimum $\tan \delta$ must be a minimum which is the case when AD is tangential to the curve of the powers.

Therefore, when it is proposed to carry out a flight consuming a minimum of fuel, it is necessary first of all to measure

the speed and direction of the wind and determine the most favourable speed.

Whatever this speed may be the minimum consumption of fuel will always occur below the minimum of the curve of R, for, for a given distance, s:—

$$C = Ks \tan \delta = sH,$$

and the minimum of H is realised, whatever s may be, at the same time as the minimum of $\tan \delta$. This method is due to Colonel Paul Renard (extract from the *Revue de Mecanique*). 

Graphical Solution.

The graphical solution of the preceding equations is very simple if we make use of the experiments which have been made in Anteuil's Laboratory on propulsive screws and those carried out by the National Physical Laboratory and by Mr. Eiffel on surfaces.

Consider the case of an aeroplane of surface area S and of total weight W flying normally at zero altitude at a speed V at an angle of attack i, for which the unit coefficients of drift and lift are K_x and K_y . We have, denoting by λ the co-

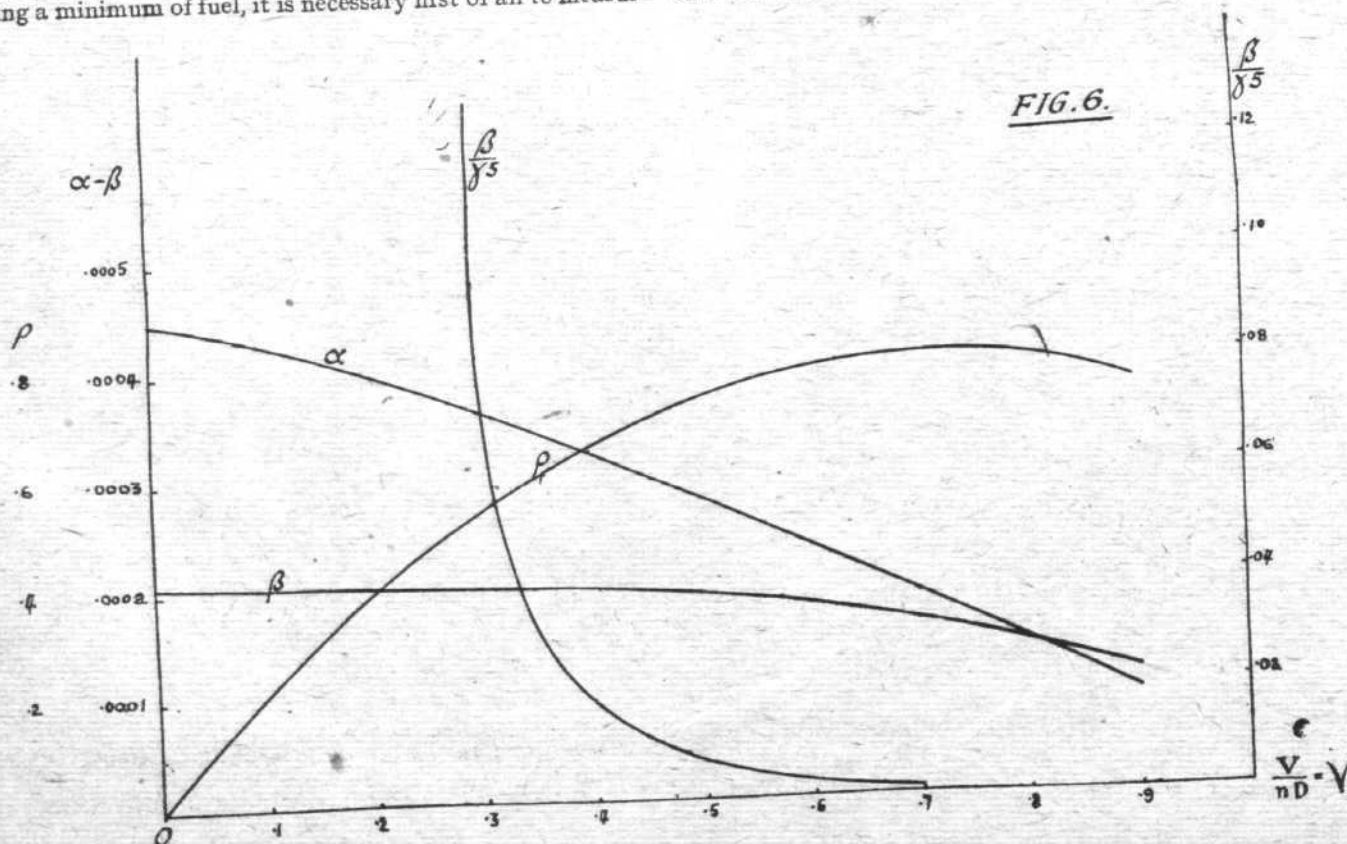


FIG. 6.

efficient of detrimental resistance and R the total resistance to motion—

$$(1) W = K_x S V^2.$$

$$(2) R = (K_x S + \lambda) V^2.$$

The coefficients K_x and K_y are determined from experience and given by the curves:—

$$(3) K_x = F_1(i).$$

$$(4) K_y = F_2(i).$$

If H is the thrust of the screw of diameter D , turning at n revolutions per second and absorbing an amount of work T , the velocity of propulsion being V , we have between these quantities the following relations of similitude, verified at Anteuil's Laboratory and found true for values of nD varying by 30 units:—

$$(5) H = \alpha n^2 D^4.$$

$$(6) T = \beta n^3 D^5.$$

$$(7) \frac{V}{nD} = \gamma.$$

$$(8) \alpha = f_1(\gamma).$$

$$(9) \beta = f_2(\gamma).$$

α and β are represented as functions of γ by experimental curves (Fig. 6) for a certain type of propeller. The N.P.L. represent the thrust coefficient as a function of γ by writing:—

$$H = \delta H_c D^2 V^2$$

where δ is the mass density of air and α is expressed in terms of H , by the relation:—

$$H = \delta H_c D^2 V^2 = \alpha n^2 D^4,$$

$$\text{whence } \alpha = \delta H_c \gamma^2.$$

If ρ is the efficiency, in terms of γ , of the whole power plant we have likewise:—

$$\beta = \frac{\alpha \gamma}{\rho} = \frac{\delta H_c \gamma^3}{\rho}.$$

To return to our system of equations, we will have last of all a tenth equation for expressing the fact that during horizontal flight the thrust of the screw H is equal to the total resistance to motion R :—

$$(10) R = H.$$

This system of 10 equations is soluble graphically with great ease.

Suppose that there is given the rotational speed n of the engine corresponding to the power T .

By eliminating D equations (6) and (7) give us the relation:

$$(11) T = \frac{\beta}{\gamma^5} \times \frac{V^5}{n^2}$$

The curve (Fig. 6) enables us to construct the diagram representing the function $\frac{\beta}{\gamma^5} = f_3(\gamma)$ for the type of propeller chosen; and as for each value of V equation (11) gives

a single value of $\frac{\beta}{\gamma^5}$ we will also obtain with the aid of the diagram (Fig. 6) a single value of α , β , and γ , which will enable us to calculate the corresponding values of H and D . To each value of V there corresponds consequently a single value of H , T , and D . We can then trace the curves representing these new functions $H = \Psi_1(V)$, $T = \Psi_2(V)$, and $D = \Psi_3(V)$.

Here the problem may be separated according to whether it is solved (a) by reference to the resistances, (b) by reference to the powers, (c) by reference to the resistances per unit weight, or (d) by the logarithmic diagram.

(To be continued.)

SOME OUTSTANDING PROBLEMS IN AERONAUTICS.

By Dr. DURAND.

(Continued from page 751.)

The Airscrew.

We shall now turn our attention for a few moments to one of the most intricate and hence one of the most interesting of the many problems presented to us by the aeronautic art, that of the airscrew or propeller. The function of the airscrew is, of course, to take the torque of the engine and to transform it into a propulsive thrust; or otherwise to take the power given by the engine to the crank shaft and transform it into driving or propulsive power for the aeroplane. The problem is further complicated by the fact that, expressed in terms of a power relation, it is not simply the question of an engine handing so much power over to the airscrew for the latter to transform into propulsive power. Instead, the power which the engine itself can develop is dependent on the propeller and likewise on the aeroplane to which they are both attached. We have here, in consequence, a series of complicated implicit relations, and from which the propulsive characteristics of the plane-propeller-engine combination take their origin. In fact, it must never for a moment be forgotten that the moving aeroplane is in effect an aeroplane-motor-propeller combination and that no one of the three can be determined independent of the other two.

Without entering into any detailed discussion of this problem, it will be clear that the airscrew will exercise a controlling influence on the power which the engine can develop. Thus, it is evident that an aeronautic engine, in order to develop power, must be permitted to move its pistons, to revolve its crank shaft, in other words, to make revolutions; and other things equal, the power developed will vary directly with the revolutions which can be realised. Again, it is easy to see that the size and amount of surface of the airscrew blades will present a controlling feature regarding the revolutions which can be realised. Thus, the airscrew may be enormously over size, too large in diameter and presenting a large and unwieldy surface to the air. Suppose this to be the case with a plane of size suited to the airscrew but not to the engine. That is, the engine is far too small for either airscrew or plane. In such case the engine simply will not be able to make its normal number of revolutions. It will be held down by the excessive resistance to rotation presented under such circumstances, and may thus develop far less than the normal power which it is capable of under proper conditions. Many other combinations may occur which we cannot stop to discuss or even to mention. Broadly speaking, the plane, the engine and the airscrew, as the propelling agent, form a most closely knit combination, and each interacts in a more or less controlling manner on the operation of the other two.

In order even to make a start with the problem of the airscrew it is therefore necessary to assume conditions regarding both the plane and the engine. If these conditions, as assumed, are then realised in practice, and if the design has been well carried out, the anticipated results may be reached. If, on the other hand, the assumed conditions are not realised as regards the plane and the engine, then no matter how well the design of the airscrew may have been carried out, the anticipated results will not be realised. Hence, no matter how good the airscrew may be by itself, no matter how carefully designed and constructed, no matter how faithfully it may be able to realise the conditions for which it is designed, if these are not the conditions under which it is actually placed for service, the results economic and otherwise will be unsatisfactory; not necessarily by reason of any fault in the airscrew as such, but due simply to its lack of adaptation to the conditions of operation. An effective airscrew is therefore not only one which is properly designed and constructed in itself, but also one which is permitted to operate under the conditions intended and contemplated in the design.

All this is, of course, well known, and if I have taken the time to repeat these well-known facts, it is the more clearly to bring to our minds at the present moment the fact that the airscrew represents not only a problem in itself, but also one of adaption to and of usage with the proper combination of plane and of prime mover. The general problem of the airscrew is by no means, however, to be classed distinctively as outstanding. Instead, an enormous amount of work has been done on it, both theoretically and experimentally, and in its main features it has been brought fairly within the limits of a solved problem. There have been three modes of approach, briefly, as follows:—(1) The analysis, geometrically, of the blade of an airscrew into a series of elements, occupying each a narrow strip running across the blade from leading to following edge and making up, by their summation, the blade as a whole. Each of these elements or strips is then considered as, in effect, a little elementary aerofoil and for which the usual aerodynamic characteristics are readily determined, either by direct experiment on a model, or by selection or interpolation from and among the large amount of available data regarding such aerofoils which have already been submitted to experimental investigation. With such data in hand relating to the series of elements going to make up the blade, it is a matter of simple computation to combine them in such manner as to represent the action of the blade as a whole, under the conditions assumed, and thus in general terms the problem is solved. (2) A law of similitude is assumed,

and a small model propeller is tested out experimentally and under conditions which permit, under the law of similitude assumed, the translation of the *observed* results for the model into the *probable* results for the full sized airscrew. (3) Full sized airscrews are tested out as nearly as may be under flying conditions, and are made the ultimate basis of design.

The limitations of method No. 1 arise from the following:—(a) The coefficients derived for aerofoils correspond to straight line motion between the air and the foil, whereas, in the airscrew, the relative motion is in a helical or spiral path. (b) The actual velocities for which such coefficients are derived are usually for speeds not exceeding 60 or 70 miles per hour, whereas the actual speeds of the tip elements of airscrew blades may move at speeds of 500 m.h. and upward. The extent to which the usual square of the speed law may be extended to such values is not as yet fully known. (c) The coefficients used are derived for the various aerofoil sections or elements individually, whereas, in the actual airscrew, they all act conjointly or collectively in making up the airscrew blade.

Application of method No. 1 cannot therefore be made except in so far as it is justified by actual and final experience on full sized forms under flying conditions. Method No. 2 (that with reduced size models) has the limitation that the law of similitude employed is, of necessity, not exact but approximate and the degree of reliance which can be placed on results thus found can again only be determined by ultimate reference to full sized forms under flying conditions. Method No. 3 (that with full sized forms under actual flying conditions) has the limitation of very high cost, both in equipment and time, and as a result of which only a relatively small number of forms can actually be subjected to adequate test in this manner. Again, method No. 1 (that of computation based on coefficients determined by laboratory experiment) has the advantage of requiring only a pencil and pad of paper with a table of predetermined coefficients. No. 2 (that with the small models) has the advantage over No. 3 of relatively small cost, of permitting the tests to be carried out in a wind tunnel with all conditions under control, and finally to permit of carrying quickly through the test programme a very large number of types and forms. It should perhaps be stated here that as between methods No. 1 and No. 2, the latter is accepted as much the more reliable of the two. In fact, it is not too much to say that when used with judgment it furnishes a very satisfactory and well-nigh universally accepted method for dealing in a laboratory way with most problems of airscrew design and operation.

If we have tarried so long over these phases of the problem of the airscrew propeller, present methods of design, &c., it is in order to bring into clearer relief the parts of the problem which are not yet well in hand—the parts which are as yet outstanding and awaiting our further study.

These phases which thus stand out represent in effect the lack of an adequate correlation between the three methods of approach as above described. It is obvious that if we could develop an adequate and reliable correlation between the results of the computation according to method No. 1 and the final test under flying conditions according to No. 3—if, in other words, we could adequately determine the error of No. 1 and hence the correction to be applied in any given case, then a pencil and pad of paper would go a long way towards furnishing the material for the solution of the problem of airscrew design, once that we are permitted, of course, to assume a definite set of operative conditions. Or again, if we could know more accurately and more widely the character and amount of error to be anticipated in the use of the small models according to method No. 2, we should be in a position to use the experimented model method with better assurance of

definite and reliable results for the full-sized screw later to be constructed. It seems likely that this final correlation of computation with ultimate result may best be made in two stages. The first should comprise a careful study of the relation between the results derived by the computations of method No. 1 and the model tests of method No. 2. Such a correlation would then permit us to pass readily from the results by computation to the probable results by model.

The second correlation should then comprise a series of comparative tests to determine with sufficient generality of application, the character and amount of correction to be applied to the results of model test in order to satisfactorily reproduce the results to be expected from full-sized forms. This would, by no means, require the testing of a full-sized form corresponding to each model. If so, there would, of course, be no use in making model tests. The whole programme might as well be carried out directly by tests on full-sized forms. It appears reasonable to expect, however, that a well selected and not too numerous series of tests, properly distributed among the various characteristics of form and of operation, would serve adequately to give the correlation desired. With such correlations established, we should then have two methods, Nos. 1 and 2, available for the design of airscrews. No. 1 available with no more than a pencil and pad of paper (once the standard section coefficients determined), and No. 2, by model, ready to supply a vast amount of detailed information regarding operation under varying conditions, and which may be realised rapidly and effectively once the model is made. If we have spent so much time over these matters relating to the airscrew, it is because of its importance as an element in aerial navigation, and in order that we may the better note just what part of the general problem is still outstanding. This, as we have seen, lies primarily in the matter of the correlation between the three methods outlined. There is indeed need for continuing experimental research, especially on systematically selected forms, both model and full size; and such continuing experimental work combined with carefully directed studies of correlation will go far toward giving us an assured and adequate basis for the practical solution of the airscrew problem as applied to aerial navigation.

Reaction between Airscrew and Plane.

Perhaps the widest and most important outstanding problem in connection with aeroplane propulsion has relation to the reaction between the plane and the propeller—the influence of the structures adjacent to the propeller on its performance, ecomic and otherwise, and the influence of the propeller on the plane, both as regards its lift and its net resistance to propulsion. This is a field which is largely outstanding. It must be attacked chiefly by the experimented method—by model with results checked up by comparison with full scale trials so far as practicable. Time forbids more than the mention of this promising and largely uncultivated field of aerodynamic investigation.

Multiple Airscrew on One Shaft.

Of a closely related nature is the problem of the interaction of two or more airscrews on one shaft. This is a problem which is becoming of importance in connection with the increase in power of aeroplane power plants and with the fitting of more than one airscrew on the same shaft. This likewise is a problem which must be approached experimentally—again through model research checked up by comparison with full scale tests. A beginning has been made on this most important and interesting problem, and we may expect, in a not distant future, to find it brought within limits of control similar to those surrounding the problem of the individual airscrew.

(To be concluded.)

Vedrine Promoted.

It is announced that the well-known French aviator, Vedrine, has been appointed sub-lieutenant.

Attempted Raid on Paris.

AN official report issued in Paris stated that on the night of July 1st-2nd enemy aeroplanes crossed the lines and made for Greater Paris. They were however turned back before reaching the capital and there was nothing to report. The Alert was sounded at 12.34 and the "All clear" at 12.59.

Aeroplanes to Chase Bandits.

ACCORDING to a note from El Paso, Tex., a military aeroplane has been received at Juarez, Mex., from Mexico City and it is to be used to assist Major J. Gomez Tagle, commander of the Juarez garrison, in rounding up the bandits along the international border.

An Extraordinary Accident.

THE danger of carrying out flying acrobatics over in-

habited areas was again emphasised at Brighton on June 8th. While an aeroplane was "looping the loop" a sandbag fell from it and struck George Ralph Sinder, a builder's foreman, inflicting injuries which proved fatal.

Ex-Mayor of New York Killed.

AFTER flying a single-seater for half an hour at Gerstner Field, Louisiana, Major J. P. Mitchel was killed at 7.30 a.m. on July 6th, but no details have been reported as to how the accident occurred beyond the fact that the machine fell 600 ft. into a marsh. Major Mitchel's body was found 100 yards away from his machine and apparently his safety belt had become unfastened. Major Mitchel was elected Mayor of New York in 1913 having previously acted as Deputy Mayor on Mayor Gaynor being shot in 1910; at the close of his term of office he decided to enter the Aviation Corps, remarking to a friend that a man could not die more gloriously than fighting for his country.

THE ROYAL AIR FORCE

London Gazette, July 2nd.

The following temporary appointments are made:—

Brigade Commanders.—And to retain their temp. rank while so employed:—
Lieut.-Col. (Temp. Brig.-Gen. in Army) L. E. O. Charlton, C.M.G., D.S.O.;
Lieut.-Col. (Temp. Brig.-Gen. in Army) R. E. T. Hogg, C.I.E.; Lieut.-Col.
(Temp. Brig.-Gen. in Army) C. L. N. Newall; Lieut.-Col. (Temp. Brig.-Gen.
in Army) D. le G. Pitcher, C.M.G.; April 1st. Lieut.-Col. (Temp. Brig.-Gen.
in Army) T. I. Webb-Bowen, C.M.G., D.S.O.; April 3rd. Col. (Temp. Brig.-
Gen., now Temp. Maj.-Gen.) J. F. A. Higgins, D.S.O.; April 1st to 28th.

Brigadier-Generals.—And to retain their temp. rank while so employed:—
Air.-Col. (Temp. Brig.-Gen. in Army) P. W. Game, D.S.O. P.—Lieut.-Col.
(Temp. Brig.-Gen. in Army) F. L. Festing, C.M.G. Q.—Lieut.-Col. (Temp.
Brig.-Gen. in Army) H. R. M. Brooke-Popham, D.S.O.; April 1st.

Group Commanders.—And to be Temp. Cols. while so employed:—Lieut.-
Col. D. G. Conner; May 18th. Lieut.-Col. H. A. Williamson; June 27th.

Staff Officers, 1st Class.—And to be Temp. Lieut.-Cols. if not already holding
that rank:—Air.—Maj. (Temp. Lieut.-Col.) G. L. Crossman, C.M.G., D.S.O.,
Lieut.-Col. H. D. Goldsmith, D.S.O., Maj. (Temp. Lieut.-Col.) F. C. Sheldermine.
Q.—Maj. (Temp. Lieut.-Col.) H. Blackburn, M.C., Maj. (Temp. Lieut.-Col.)
H. C. H. Hudson, M.V.O.; April 1st. S.—A. J. Clark (Bt. Maj., Lond. R.
(T.F.)), and is granted a temp. commn. as Maj.; April 4th. Maj. R. J. F.
Barton; May 27th. T.—Maj. (Temp. Lieut.-Col.) M. Spicer; April 1st.

Staff Officers, 2nd Class.—And to be Temp. Majors, if not already holding that
rank:—(Air).—Maj. R. J. F. Barton, Capt. H. W. M. Paul; April 1st. Capt.
(Temp. Maj.) Rt. Hon. Sir J. A. Simon, vice Maj. R. J. F. Barton; May 27th.
(P).—Capt. R. S. Lindsell, Lieut. (Temp. Capt.) A. H. Stradling; Capt. A. J. W.
Barmby; May 3rd, 1915. Capt. F. G. Stammers; June 15th. G. W. Dobson;
July 3rd. W. G. P. Young (Capt. (Temp. Maj.) Shropshire, Yeos. T.F.), and is
granted a temp. commn. as Capt.; April 1st. Capt. A. S. Ellerton; April
25th. (S).—Maj. H. A. R. Aubrey, M.C., Lieut. (Temp. Capt.) R. Addebrooke-
Prout, M.C., Capt. C. C. Boyd-Rochford, Capt. A. J. Child, M.C., Lieut. (Temp.
Capt.) T. M. Egar, Capt. E. C. Fulton, Capt. C. F. Gordon, M.C., Lieut. (Temp.
Capt.) F. S. Isaac, Capt. G. C. May, Capt. J. Selwyn, vice Capt. G. C. May;
April 10th. Capt. C. G. Beatson, vice Capt. A. J. Child, M.C.; May 3rd. Capt.
J. G. Howell, M.C., vice Lieut. (Temp. Capt.) F. S. Isaac; May 20th. (T).—
Lieut. (Temp. Capt.) R. H. Peto; April 15th. Capt. (Temp. Maj.) C. E. Gardner;
May 13th. Lieut. (Temp. Capt.) T. G. Baxenden; May 17th. Capt. L. J.
Killmayer; May 22nd. Lieut. (Temp. Capt.) H. F. Anns; June 12th. Lieut.
(Temp. Capt.) H. A. Tweedie; June 13th.

Staff Officers, 3rd Class.—And to be Temp. Captains, if not already holding that
rank:—(Air).—Lieut. (Temp. Capt.) L. A. K. Butt, Capt. C. B. Krabbe. (P).—
Lieut. (Temp. Capt.) E. J. Briscoe, Sec. Lieut. (Hon. Capt.) S. Smith; April
1st. Lieut. (Temp. Capt.) A. E. Hartley; April 2nd. Capt. E. A. Beluah,
Lieut. H. S. Blakeley; May 1st. Lieut. A. D. Finney; May 8th. (S).—
Capt. C. G. Beatson, W. S. Evans (Capt., Welsh R.), and is granted a temp.
commn. as Capt.; Capt. W. J. E. M. Everard, Lieut. (Temp. Capt.) S. D.
Felkin, Capt. J. G. Howell, M.C., Lieut. (Temp. Capt.) P. C. Hoyland, Capt.
J. Selwyn, Lieut. (Temp. Capt.) F. G. Stammers, G. T. Tait (Temp. Capt. in
Army) and is granted a temp. commn. as Capt.; Lieut. J. S. Webb, Capt. R.
Whittaker; Hon. M. H. R. Knatchbull-Hugessen, M.C. (Lieut., R.A.), and
is granted a temp. commn. as Lieut.; April 20th. Lieut. (Temp. Capt.) H. O.
Barnaby, vice Capt. C. G. Beatson; May 3rd. Capt. F. D. Lord Doune, M.C.;
May 21st. (T). Lieut. J. J. Bartlett; April 1st. Sec. Lieut. R. Hely; May
8th. Sec. Lieut. (Temp. Lieut.) H. B. Langton; May 10th.

Camp Commandant (graded for purposes of pay as S.O. 3).—H. Hibbard
(Lieut., Res., Household Bn.), and is granted a temp. commn. as Lieut., and
to be Temp. Capt. whilst so employed, vice Lieut. (Temp. Capt.) F. W. Angus;
April 25th.

Flying Branch.

Major (Temp. Lieut.-Col.) R. R. Smith-Barry to be Temp. Col. whilst specially
employed; June 19th.

Capt. (Temp. Maj.) C. F. Portal, D.S.O., M.C., to be Temp. Lieut.-Col. whilst
employed as Lieut.-Col. (A. and S.); June 17th.

The following Lieuts. (Temp. Capts.) to be Temp. Majors whilst employed as
Majors. (A. and S.).—E. Cadbury, D.S.C.; April 1st. A. C. Jowett; June 17th.

Lieuts. to be Temp. Captains whilst employed as Captains. (A. and S.).—F. G.
Pinder; June 1st. D. R. Brook, F. Carr; June 16th. R. J. B. Benson, F.
McChesney; June 17th. H. J. Pratt; June 22nd. W. G. Holbrow; June
25th.

Lieuts. (Hon. Capts.) to be Temp. Captains whilst employed as Captains. (A. and
S.).—C. L. Bailey, H. S. Broad, J. H. Keens, E. E. Maitland-Herriot, P. H.
Martin, F. S. Mills, E. M. Morgan, R. S. de Q. Quincey, K. F. Saunders, N. M.
Scott, H. L. E. Tyndale-Biscoe, A. A. Wallis; May 1st. L. C. Shoppee, D.S.C.;
May 9th. G. H. T. Barnes, C. J. Clayton, R. Davies, E. E. Deans, C. Perrett,
G. M. T. Rouse, A. R. Stack, A. M. Tidy; June 1st. Capt. (Temp. Maj.) D.
R. Gawler, M.C., relinquishes the temp. rank, and reverts to the rank of Capt.
whilst employed as Capt. (A. and S.); May 6th. Lieut. (Temp. Capt.) H. W.
Eades to be Lieut. (O.), from Tech.; May 25th.

The following Lieuts. from Observer Officers, to be Lieuts. (A. and S.).—
G. E. Randall; May 20th. A. Swales; May 23rd. C. H. Wallis; May 25th.
Sec. Lieut. W. Z. Grandi, from Tech., to be Sec. Lieut. (A. and S.); May 30th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed
in their rank as Sec. Lieuts. (A. and S.).—J. D. Smith; April 7th. R. T.
Nixon; April 9th. M. Genest; April 15th. A. B. D. Campbell; May 5th.
M. J. Levine; May 7th. C. H. P. Killick; May 10th. W. F. M. Wise; May
15th. J. D. Henshaw; May 17th. O. H. P. Lloyd, M. A. Vachon; May 18th.
J. E. G. Rochemont, A. W. Southall, A. S. Bradburn, J. H. Ratcliffe, R. Lazzari,
H. F. Allbutt, F. C. Bennett, W. W. McDavid, E. S. B. Clarke; May 20th.
S. N. Waddy, S. L. G. Beaufoy, F. B. Misero, L. Arnott; May 21st. K. G.
Ibison, S. L. Walters; May 22nd. S. Richardson, H. H. Botting; May 23rd.
M. A. K. Carpenter; May 24th. A. S. Maltby, J. Satterthwaite, E. C. Gordon;
May 25th. N. W. Churchill, R. W. Payne; May 26th. J. B. Smith, C. H.
Hobson; May 27th. J. Cooke, M. A. Toomey, G. McG. Chalmers, J. P. Bernigaud;
May 28th. H. Alcock; May 29th. R. Beesley, H. T. Perkins, H. G. Packford,
J. M. Meston, H. H. Parker, A. J. Girardot, C. F. D. Evans; May 30th. M. R.
Jacobs, C. S. Leslie, J. S. Hughson, J. B. Macdonald, G. Herring, A. D. Kennedy,
A. E. Thorp, A. D. Greenbough, W. H. Dillon; May 31st. A. J. P. Evans,
F. G. Coulson, H. A. Edwards, H. J. Fox, R. G. Adams, J. H. H. Doughty-
Davies; June 1st. L. D. Russell, H. Parker, R. A. P. Johnson, F. C. Taylor
(date of 1st commn. Aug. 23rd, 1917). S. P. Seddon, S. T. C. Roberts, F. W.
Sinclair, C. D. Thornton, A. R. Pengilly, J. Ure, F. J. S. Claydon, J. R. Gaze,
G. S. Bragg; June 2nd. G. W. C. Ravenhill, J. N. Payne, G. W. Willis; June
3rd. B. G. Pool, W. A. N. Butler, A. R. Collis, W. F. McManus, H. N. Hastie,
C. V. Felbauer, K. G. Nairn; June 4th. W. T. Jones, H. J. Gye, T. D. Drury,
P. J. O'Donnell; June 5th. J. C. Collins; June 7th. L. G. Tearle, G. E. T.
Payne; June 8th. H. S. McDowall; June 14th.

The following are granted temp. commns. as Sec. Lieuts. (A. and S.).—
J. Spooner (Temp. Sec. Lieut., attd. R. War. R.); May 28th. H. R. Hayden

(Temp. Sec. Lieut., attd. Welsh R.); May 29th. B. R. Collison (Capt. L'pool.
R.), and to be Hon. Capt., G. H. Hunt (Lieut., Sask. R., C.E.F.), and to be Hon.
Lieut., E. H. D. Fowler (Sec. Lieut. Midd'x. R.); May 31st. J. R. Traves
(Temp. Sec. Lieut., attd. York. and Lanc. R.), C. A. Brown (Lieut., Quebec
R., C.E.F.), and to be Hon. Lieut., S. E. Sutcliffe (Temp. Lieut. North'd. Fus.),
and to be Hon. Lieut.; June 1st. C. P. Tindal-Atkinson (Temp. Capt., N.
Lan. R.), and to be Hon. Capt., A. H. Bill (Lieut., Sask. R., C.E.F.), and to
be Hon. Lieut.; June 4th. W. M. Herriot (Sec. Lieut., L'pool. R.); June 5th.
H. B. Hatcher (Temp. Sec. Lieut., Midd'x. R.); O. H. Hadley (Temp. Capt.,
N. Lan. R.), and to be Hon. Capt.; June 7th.

The following Cadets are granted temp. commns. as Sec. Lieuts. (A. and S.).—
H. L. Allward, H. P. Ayres, A. S. Ball, W. G. Boyd, W. Y. Bogle, P. S. Brown,
C. H. Browne, H. Burdick, D. L. Butchart, J. M. Byrne, J. G. Callaghan, W.
L'E. Carroll, H. Cheetham, F. D. Cowan, M. H. F. de Haerne, G. W. Dyson,
H. H. Dobson, H. V. Feather, A. A. Forhan, H. A. Freeman, G. F. Freer, C. W.
Gracey, A. Graham, H. C. Graham, P. A. Hainstock, F. McL. Harrison, A. S.
Helmer, H. Higgins, W. W. Ingram, E. J. Jones, R. A. Jones, W. N. Keeling,
C. W. Kerr, J. A. Y. Laforest, R. G. La Motte, C. G. Lang, F. F. Leet, F. C. Logan,
R. D. Lovesey, A. J. Marshall, W. C. Marshall, A. S. Mathews, F. C. McAdams,
R. S. McConnell, R. C. McHenry, A. E. McKenna, R. H. Mills, W. E. Mosher,
E. C. O'Donnell, D. S. Osborne, C. R. Parkinson, O. B. Santa Maria, C. D. Smith,
C. H. Tripp, A. M. Webb, F. W. Wells, W. H. Wilde, M. L. Williams, H. B.
Wilson, D. Withycomb, H. C. Wood, W. C. Taylor; May 23rd. A. J. Adamson,
C. W. C. Barber, A. F. Beyles, C. E. Binet, H. C. Bourke, E. H. Brown, J. B.
Browning, R. R. Caldwell, H. E. Chaffey, H. J. Clark, C. C. Creighton, G. R. David-
son, M. R. de Miego, L. W. De Serres, J. W. Grooms, E. P. Hall, L. P. Harlow,
R. H. Harlow, W. K. Hogg, W. B. Lake, A. C. Langtry, R. A. Macdonald,
G. A. Moir, F. R. Orris, F. L. Pogue, W. B. Ramsay, R. W. Roberts, L. S. Ros,
G. D. Scovill, H. G. Shaw, T. D. Shaw, H. B. Singleton, G. P. Styles, J. T. Taylor,
R. Williams; May 30th. J. W. Bellah, G. H. Cote, L. L. Cullen, M. L. Hall,
H. C. Ingram, C. D. Gile; May 31st.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed
in their rank as Sec. Lieuts., Observer Officers.—E. C. Bethell; May 25th.
I. B. Corey, P. Pilkington, P. S. Hartley, J. H. Gray; June 1st. P. F. Hilborn;
June 6th. T. F. L. Myring; June 8th. R. Walker; June 10th. E. G. Briggs.
R. M. Doyle, J. Glover, F. D. Marshall, G. N. Troth, R. F. Jarrom; June 11th.
C. H. A. Collins, J. M. Evans; June 12th. J. B. Russell; June 13th. F.
Shaw; June 14th. C. C. Dance, W. R. Henderson, W. S. Marshall, A. E.
Durling, C. C. Walsley, E. A. Dew; June 16th. G. McM. Findlay, A. Hogg;
June 17th. J. B. Cockin, T. Garlick, H. S. Hind; June 17th.

The following are granted temp. commns. as Sec. Lieuts., Observer Officers:—
T. Newey (Temp. Sec. Lieut., Leic. R.); May 17th. C. Beagle (Temp. Sec.
Lieut., Manch. R.); May 26th. G. R. Schooling (Temp. Sec. Lieut., North'd.
Fus.), W. H. E. Labatt (Temp. Sec. Lieut., W. York. R.), H. B. Steckley (Sec.
Lieut., Lond. R., T. F.), D. J. Mull (Sec. Lieut., R. War. R., T.F.), K. Nixon
(Sec. Lieut., W. Rid. R., R.F.A.), J. Whitehead (Temp. Sec. Lieut., W. York.
R.), A. Urinowski (Temp. Sec. Lieut., L'pool. R.), E. Vickers (Sec. Lieut., W.
Rid. R., T.F.), W. D. Clark (Temp. Sec. Lieut., Durh. L.I.), S. W. P. Foster-
Sutton (Sec. Lieut., E. Kent R.); June 1st. R. W. Ellis (Temp. Sec. Lieut.,
North'd. Fus.); June 2nd. J. Arnold (Sec. Lieut., L'pool. R., T.F.), F. P.
Cobden (Temp. Lieut., M.G.C.), and to be Hon. Lieut., G. Davies (Sec. Lieut.,
N. Lan. R., S.R.), M. R. H. Kane (Lieut., R. Dub. Fus., S.R.), and to be Hon.
Lieut. D. E. F. Waigh (Lieut., North'd. Fus.), and to be Hon. Lieut.; June
8th. A. T. le F. Johnson (Lieut., Lord Strathcona's Horse, C.E.F.), and to
be Hon. Lieut.; June 9th. R. W. Griffiths (Temp. Lieut. Leic. R.), and to
be Hon. Lieut. C. G. Johnson (Lieut., Can. Rly. Service, C.E.F.), and to be Hon.
Lieut. A. W. Whitmore (Temp. Sec. Lieut., Leic. R.), N. Riddell (Lieut., Hamps.
Yeo., T.F.), and to be Hon. Lieut., A. C. Dutton (Sec. Lieut. R.W. Kent R.,
T.F.), J. L. McPherson (Sec. Lieut. High L.I., T.F.); June 11th. A. C. Estcourt,
M.C. (Temp. Sec. Lieut., Gen. List, New Armies; June 12th. P. Wilkins,
M.C. (Temp. Sec. Lieut. R.E.), O. Sherwood (Sec. Lieut., Durh. L.I., T.F.);
June 13th. A. M. Pearson (Sec. Lieut., Som. L.I.), T. H. R. Riggs (Sec. Lieut.
Linc. R.), G. Archer (Temp. Sec. Lieut., Suff. R.), T. Wiggins (Temp. Sec. Lieut.
Lan. Fus.), A. L. Benjamin (Temp. Lieut., R. Fus.), and to be Hon. Lieut.
W. B. Walker (Sec. Lieut., High L.I., S.R.), R. F. Connell (Temp. Sec. Lieut.
K.R.R.C.), H. S. Notley (Temp. Lieut., K.R.R.C.), and to be Hon. Lieut.;
June 14th. E. A. Wadsworth (Temp. Sec. Lieut., E. York. R.), C. E. Eddy
(Temp. Sec. Lieut., S. A. Inf.); June 16th. W. H. Thompson (Temp. Sec.
Lieut., attd. North'd. Fus.), L. H. Bell (Temp. Sec. Lieut., attd. Glouc. R.),
E. Kew (Temp. Sec. Lieut., North'n R.), R. D. Linford (Temp. Sec. Lieut., attd.
R. War. R.), H. Mercer (Sec. Lieut., E. Lan. R., T.F.); June 17th. Lieut.
C. F. J. North, from A. and S. to be Lieut., Observer; June 11th.

The following Cadets are granted temp. commns. as Sec. Lieuts., Observer
Officers.—R. F. Cathrow, R. O. Baird; June 26th. R. G. Gibbs, N. H. Wildig,
J. F. Pollock; June 28th. A. Birch, A. F. Cairns, W. Hutchings, S. Ham-
mersley, G. F. Custance, M. R. Prodder, A. O. Moore, R. N. Palmer, W. A.
Evans, C. Harrison, K. G. M. Galletly; June 29th.

Lieut. T. A. Armstrong resigns his commn.; July 3rd.

Lieut. B. Vandell resigns his commn., and is granted the hon. rank of Lieut.;
July 3rd.

The following Lieuts. relinquish their commns. on account of ill-health caused
by wounds, and are granted the hon. rank of Lieut.:—W. H. Maturin, C. R.
O'Hagan; July 3rd.

Administrative Branch.

Lieut.-Col. J. Attenborough, C.M.G., D.S.O., to be Temp. Col. while employed
as Col.; April 1st.

Maj. H. B. Bonning to be Temp. Lieut.-Col. while employed as Lieut.-Col.;
April 17th.

Lieuts. (Temp. Capts.) to be Temp. Majors while employed as Majors.—E. G. A.
Lefrere; June 19th. A. Young; June 24th.

Capt. (Temp. Maj.) G. H. Cox to be Maj. (from A. and S.); June 10th.

Lieuts. to be Temp. Captains while employed as Captains.—C. F. Powell; June
14th. F. Jewell; June 21st.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.—(Hon. Lieut.
J. W. Harling; June 19th. W. L. Rees; June 24th.

Lieuts. (A. and S.) to be Lieuts.—L. G. Bacon; April 8th. N. E. S. Simon;
June 4th. A. Glynn; June 15th. A. D. Carey; June 18th. E. W. Berry,
H. G. Cox; June 20th. C. H. Clifford, E. W. Hadrill; June 24th.

Lieuts. (O.) to be Lieuts.—H. P. L. Gardner; June 17th. S. G. Barlow,
C. W. Wilson; June 24th.

The following are granted temp. commns. as Sec. Lieuts.—W. W. W. Reilly
(Capt., Conn. Rang.), and to be Hon. Capt.; E. D. Edwards (Lieut., Lan. Fus.
S.R.) and to be Hon. Lieut.; R. S. Cowen (Temp. Lieut., attached K.R.R.C.),
and to be Hon. Lieut.; June 7th. H. W. Croft, H. A. Lambert, A. O. M.
Limb, E. A. Woods; July 1st.

The surname of Sec. Lieut. J. R. Derouet is as now described, and not as
stated in Gazette June 21st.

The following Lieuts. relinquish their comms. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut.:—H. B. O'Hagan, D. G. O'Reilly; July 3rd.

The following Sec. Lieuts. resign their comms., and are granted the hon. rank of Sec. Lieut.:—G. J. Bowden, J. I. Rikh; July 3rd.

Sec. Lieut. R. Lyon relinquishes his commn. and is granted the hon. rank of Sec. Lieut.; July 3rd.

Sec. Lieut. F. George relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lieut.; July 3rd.

Sec. Lieut. E. G. Morris relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lieut.; July 3rd.

Sec. Lieut. T. H. Somerville relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; July 3rd.

Technical Branch.

To be Temp. Maj., while employed as Maj.:—Capt. G. W. Williamson, M.C.; May 6th. Lieut. (Temp. Capt.) J. N. D. Heenan; June 19th. Lieut. (Temp. Capt.) C. H. Nathan; June 21st. Capt. C. H. Acock; June 25th. Capt. (Temp. Maj.) G. de L. Woodbridge to be Maj. (from Admin.); April 1st.

To be Temp. Capt., while employed as Capt.:—Lieut. D. Clark, Lieut. K. D. G. Collier; April 1st. Sec. Lieut. (Hon. Maj.) H. P. Coles; May 26th. Lieut. (Hon. Capt.) F. W. Bedford; June 24th.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.:—W. E. Townsend; April 2nd. (Hon. Lieut.) N. W. Wale; May 9th. R. W. Anderson; June 29th.

Lieuts. (A. and S.) to be Lieuts.:—(Hon. Capt.) A. M. Hughes; June 19th. L. C. Pincott; June 24th. D. R. Snider; June 28th.

Lieut. N. W. Rostron to be Lieut. from (Admin.); June 17th.

Sec. Lieuts. to be Lieuts.:—C. Atkey, R. G. Fussell, R. B. Hutchings, W. R. Kells, G. A. Lush, Sir C. C. Mansel, Bt., L. O. Millington, S. H. Roberts, H. R. South, F. B. Stradling, F. A. Thomas; April 2nd. S. M. Barrett, B. Rotherham, J. G. Speirs; May 4th. J. W. Clark; May 10th. A. H. Johnson; May 11th. U. P. Jonckheers, R. D. Owen; June 7th.

Medical Branch.

Lieut. F. R. McCambley to be Capt.; June 13th.

The following are granted temp. comms. as Lieuts.:—(Substituted for notification in *Gazette* June 11th).—L. C. W. Balls, R. A. Spong, H. L. Thorn; June 6th.

Lieut. G. O. Roper to be Lieut. from (K.B.); June 22nd.

Memoranda.—Sec. Lieuts. to be Lieuts.:—J. A. Galbraith; April 13th. A. C. Clinton; April 26th. F. D. Coleman; May 17th.

The following Lieuts. relinquish their comms. on ceasing to be employed:—(Hon. Maj.) P. C. Franklin (Maj., A.S.C., T.F.); June 16th. (Temp. Capt.) H. H. Hanchett-Glover (Lieut., R.N.V.R.); June 29th.

London Gazette, July 5th.

The following temp. appointment is made at the Air Ministry:—*Staff Officer, 2nd Class*.—(S.) R. D. Waterhouse (Temp. Maj. in Army), and is granted a temp. commn. as Maj.; May 22nd.

The following temp. appointments are made:—

Staff Officers, 2nd Class.—And to be Temp. Maj., while so employed:—Lieut. (Hon. Capt.) C. H. Keith; April 1st. Capt. G. R. Newton; May 22nd. (P.) (substituted for notification in *Gazette*, July 2nd); Capt. R. S. Lindsell; Lieut. (Temp. Capt.) A. H. Stradling; April 1st. (O.) Lieut. (Hon. Capt.) G. W. Frost; April 22nd. (T.) Lieut. C. Q. Steel; May 22nd.

Flying Branch.

Maj. (Temp. Lieut.-Col.) T. W. C. Carthew, D.S.O., retains his temp. rank while employed as Lieut.-Col. (A. and S.) from S.O.; July 2nd.

Lieut. (Temp. Capt.) E. Mannock, M.C., to be Temp. Maj. while employed as Maj. (A. and S.); June 19th.

Lieut. (Temp. Capt.) J. A. Cochrane, M.C., to be Temp. Maj. while employed as Maj. (K.B.); June 14th.

Lieuts. to be Temp. Capt., while employed as Capt.:—G. A. Hutchinson; June 10th. H. Fall, H. G. Hegarty, M.C.; June 13th. F. B. Wilson; June 14th. F. W. Burdick; June 16th. W. B. Elliott; June 17th. F. M. F. West, M.C.; June 19th. V. Beecroft, A. Lindley; June 20th. W. Selwyn; June 21st. D. C. M. Brooks, H. R. Gould; June 24th. J. E. Drummond; June 26th. Capt. W. Morrice to be Lieut. (A. and S.) (from Admin.); June 25th. Lieut. O. I. Vetter to be Temp. Capt. while employed as Capt. (K.B.); June 14th. Sec. Lieut. H. R. Watterson to be Temp. Lieut. while employed as Lieut. (K.B.); June 16th. Lieut. (Temp. Capt.) J. J. Gaynor relinquishes the temp. rank of Capt. on reversion to Lieut. (O.); June 29th.

Lieuts. (Observer Officers) to be Lieuts. (A. and S.):—C. P. Ranger; May 13th. A. J. Tyler; May 22nd. W. M. Hes; May 27th. W. D. Rockley; May 28th. F. H. Dormer, P. T. S. Menendez, M.C.; May 30th. F. S. Harriks, W. B. Ferguson, M.C., H. P. Attwater; May 31st. E. Alder; June 1st. C. J. Agelasto; June 2nd. T. R. Scott; June 6th. K. F. Jones; June 8th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A. and S.):—R. B. Wiggins; April 2nd. N. H. Midgley; April 6th. G. Thornton-Norris; April 8th. L. S. Potter; April 12th. G. Parsons; April 13th. K. Neighorn; April 14th. H. C. Telfer; April 17th. W. S. Lockhart, T. Stead, G. E. Lillico, A. G. McGillivray, W. E. McDermott, A. W. Shaw, H. C. Sherlock; April 19th. C. R. Berdinner, G. Hanson, H. B. Scott; April 20th. J. Ostram-Taylor; April 21st. I. H. Christie, C. G. Hoffman, T. G. Hughes, F. M. Stieber; April 22nd. J. D. Paterson; April 23rd. M. P. Morgan; April 27th. L. G. Cunningham; May 1st. M. B. Lacey; May 11th. J. E. Hammond, J. M. L. Roots; May 14th. H. H. Gardner, T. W. B. Nill; May 17th. G. C. Upson, L. J. Cooke, J. R. Ashmore, C. S. Cope, H. S. Ellis, H. C. Lloyd, T. Hartford, J. R. Barnett; May 18th. A. V. Colville, F. W. Mulvey, W. E. Catton, W. S. Winter, R. D. V. Howard, L. T. Marks, J. Jackson (date of first commn. Jan. 10th), C. Stobbs; May 19th. F. C. Pacey, D. E. Cameron, H. Cunningham, S. S. Church, H. Walsley (date of first commn. Dec. 20th, 1917), T. D. Sykes, J. K. Reid, T. U. J. Nicholas, J. Scholes, N. E. D. Hutchinson; May 20th. A. V. W. Williams, J. G. Walton, J. S. Dixon, O. D. Horton, L. McIver, J. E. Baker, L. F. Copeland, G. P. Cilliers, W. Ferrier, S. A. Smith, H. J. Evans, T. A. Dickinson, W. C. Francis, F. Masson; May 21st. A. Gertrey, A. G. Johnston, W. R. Whetell, H. W. Clark, W. J. Baldwin, H. C. Tomkinson; May 22nd. W. J. Courtenay, V. F. Bendrodt; May 25th. A. G. S. Blake, N. A. Thomson, J. E. Emtage, L. E. Gosden; May 26th. V. C. Varcoe, J. Barker, H. V. Peeling, C. M. Keyworth, J. B. Gunn, W. E. Beckett, A. J. F. Maltby, J. H. McKenzie; May 27th. O. E. Miller, P. Hopkinson, V. G. Cheeseman, E. Barker (date of first commn. March 3rd), F. C. Duchesne, J. Cockedge, F. M. Clark, T. D. A. Nassau, C. M. Fraser, E. T. Maitland; May 28th. H. Elliott, P. Bushell, J. Vokey, H. E. Crane, H. T. Foxton, H. Allen, J. K. Pickard, D. A. McGregor, A. W. Elliott, J. R. Woods; May 29th. C. V. Hicks, J. R. McCormack, O. Lane, R. W. F. Smees, H. F. Taylor, F. Meehan, N. Holroyde, G. Gorrill, C. N. Gildewell, J. G. Millar, A. L. Murray, E. A. Devine, S. G. Fidos, W. F. Abbott; May 30th. L. G. Warren, J. Campbell, A. C. Richmond, R. C. Morrison, J. B. Wickham, H. S. Smith, A. Miller, H. G. H. Lowe, W. E. L. Courtney, H. A. Campbell, P. F. R. Topley, B. W. Berrington, W. R. Richardson, G. Marriott, J. A. Howard, H. G. Walsh, E. A. Bowyer; May 31st. F. Reeday, J. E. G. Robinson, M. Fearman, L. H. Walker, W. Freer, B. C. Geary, R. C. Freemantle, J. D. MacFarlane, J. A. Wrighton, J. C. Fairfax, T. W. Sleigh, A. S. Smith, J. A. L. Harris, P. Stalker; June 1st. C. C. Brouncker, R. H. Matthews, O. L. Calverley, E. E. Wilby,

S. D. Connolly, L. Wilkinson; June 2nd. A. T. Reid, A. G. MacQueen, W. R. Butler, C. F. Geyton, E. J. W. Addington, W. Todd, D. R. Phillips, C. M. E. Bennett, E. F. Newman, G. W. Waddington, A. N. Ryles, H. B. Williams, F. F. Tattam, R. R. H. Bruce; June 3rd. A. W. Timson, J. Mill, R. Pyne, B. L. Edwards, S. H. Wood, A. A. Baker, G. R. Harrison, C. A. Box, C. Nash, J. D. Coates; June 4th. R. T. Grumman, G. E. Brooks, W. Berwick, W. R. Thomson, C. F. H. Thricett, W. Foster, A. V. Speight, R. C. Mitten, H. V. Fellowes; June 4th. H. T. J. Jagger, S. J. Hill, C. A. Robertshaw, P. L. Brown, B. Champion, J. L. Hunter, L. C. Phippen, J. N. Poole, R. B. Ronald, R. V. N. Makepeace, E. W. C. Sharpe; June 6th. R. Boosey, H. M. Matthews, T. G. Speake, L. E. Walsley, R. G. De Little, P. E. Youngs; June 7th. A. O. Coghill, R. B. Walton, F. P. Dodsworth, H. D. Wardle, H. Preston, G. R. A. Dick, H. J. Roberts; June 8th. S. C. Henderson, H. T. Hempall, D. P. Jones, G. W. Stubbs, A. S. Greenwood, T. J. J. Griffiths; June 9th. C. W. Sutcliffe, S. E. Crookell, H. H. Rofe, A. Thomson (date of 1st commn., Feb. 23rd), E. L. Stacey, W. R. Leach, H. G. Lomborg, H. G. Harper; June 10th. L. T. Dickson, N. S. Smith; June 11th.

The following are granted temp. comms. as Sec. Lieuts. (A. and S.):—G. E. Wright (Temp. Sec. Lieut., A.S.C.); April 22nd. A. H. Gitsman (Temp. Sec. Lieut., Lancs. R.); May 6th. O. W. D. Sutherland (Lieut. Quebec R.C., E.F.), and to be Hon. Lieut.; May 12th. R. R. Spencer (Temp. Sec. Lieut., attd. Midd'x. R.) T. E. Smith (Temp. Sec. Lieut., attd. Worc. R.), W. T. Cole (Temp. Sec. Lieut., attd. Dorset R.), H. S. Richards (Temp. Sec. Lieut., Essex R.); May 19th. G. A. Pearson (Temp. Sec. Lieut., attd. Arg. and Suth'd. Highrs.), May 20th. G. E. Haworth (Capt. Ches. R., T.F.), and to be Hon. Capt., A. C. Holmes (Sec. Lieut., Newfoundland R.); May 21st. R. H. Schroder (Lieut., Brit. Col., R.C.E.F.), and to be Hon. Lieut.; May 25th. S. Burnett (Lieut., Bedf. R., T.F.), and to be Hon. Lieut.; May 27th. M. Brophy (Temp. Sec. Lieut., attd. N. Lan. R.); May 28th. S. G. Harman (Lieut., Welsh R.), and to be Hon. Lieut., A. S. Fraser (Capt., Dorset R.), and to be Hon. Capt., G. Rogers (Sec. Lieut., Worc. R., T.F.), J. J. Haslett (Temp. Sec. Lieut., attd. R. Berks. R.), A. McK. Matheson (Sec. Lieut., R.F.A.), H. V. Geary, M.C. (Sec. Lieut., A.S.C.), J. E. P. Adam (Lieut., R.M.), and to be Hon. Lieut.; May 29th. G. Boyce (Temp. Lieut., York R.), and to be Hon. Lieut., G. E. Wales (Sec. Lieut., Notts. and Derby R.), R. D. King (Temp. Lieut., R. Fus.), and to be Hon. Lieut., J. A. Wright (Temp. Sec. Lieut., E. Kent. R.); A. Metcalf (Temp. Sec. Lieut., Glouc. R.); J. Duncanson (Sec. Lieut., Can. M.G.C.); C. A. S. Booth (Lieut., N. Staff. R., S.R.), and to be Hon. Lieut.; N.W.G. Wilkinson (Sec. Lieut., Manch. R., T.F.); May 30th. N. V. Scott (Temp. Sec. Lieut., attd. Welsh R.); A. E. Overton (Lieut., Essex Yeo., T.F.), and to be Hon. Lieut.; N. Wardlaw (Temp. Sec. Lieut., attd. Rif. Brig.); May 31st. C. Hansen (Temp. Sec. Lieut., attd. K.R. Rif. C.); June 1st. T. C. Sutcliffe (Sec. Lieut., Lond. R., T.F.); W. Fitton, M.M. (Temp. Sec. Lieut., attd. Lan. Fus.); R. W. O. Thurburn (Lieut., Sco. Rif., S.R.), and to be Hon. Lieut.; R. S. Maitland-Edwards (Sec. Lieut., C. Gds., S.R.); June 2nd. V. J. Weber (Sec. Lieut., Bord. R., S.R.); T. P. Elder, M.M. (Lieut., Br. Columbia R., C.E.F.), and to be Hon. Lieut.; D. Wilson (Sec. Lieut., S. Lan. R., T.F.); June 3rd. W. H. Naylor (Temp. Sec. Lieut., Rif. Brig.); J. Silvester (Sec. Lieut. R. Berks. R.); J. L. T. Harrison (Temp. Lieut., Lan. Fus.), and to be Hon. Lieut.; S. I. Thomas (Sec. Lieut., R. W. Fus.); June 5th. S. Hall (Temp. Sec. Lieut., Manch. R.); J. McNamara, D.C.M. (Sec. Lieut., York and Lanc. R., S.R.); June 6th. S. B. L. Hall (Sec. Lieut., W. Rif. R.); E. J. Moule (Temp. Sec. Lieut., attd. Worc. R.); H. T. Eyres (Temp. Sec. Lieut. R.W. Surr. R.); June 8th. C. W. Murray (Lieut., R. Glasgow, Yeo. T.F.), and to be Hon. Lieut.; G. F. Davies (Lieut., Can. F.A., C.E.F.), and to be Hon. Lieut.; June 9th. M. G. Hill (Sec. Lieut., Lond. R., T.F.); S. Dumbell (Lieut., L'pool. R., T.F.), and to be Hon. Lieut.; E. Wood (Temp. Sec. Lieut., S. Lan. R.); C. B. O. Walker (Temp. Lieut., Shrops. L.I.), and to be Hon. Lieut.; June 10th. W. D. Evans (Lieut. Sask. R., C.E.F.), and to be Hon. Lieut.; W. P. Pakenham-Walsh (Lieut., R.F.A., S.R.), and to be Hon. Lieut.; June 11th.

The following Sec. Lieuts., late S.R., R.F.C., on prob. are confirmed in their rank as Sec. Lieuts., A.V.S.:—S. R. Austin; May 29th. F. S. Gordon; June 5th. Sec. Lieut. R. Johnston, from Tech., to be Sec. Lieut., A. and S.; May 15th.

The following Cadets are granted temp. comms. as Sec. Lieuts. (A. and S.):—H. A. Argles, W. L. Attridge, R. M. Atwater, R. H. Balfour, A. W. L. Beauchamp, B. F. Bunker, F. Corbin, H. C. Cramer, L. De Jean, D. F. Dempster, H. S. Dyson, A. E. Eastes, J. Freeman, L. D. Farmer, C. Guild, G. B. Gardiner, I. W. Hathaway, A. G. Hamilton, G. C. Hyatt, E. Jones, F. E. King, P. A. Kingsland, J. D. H. Lewis, L. W. Marwick, R. Maranda, A. B. D. McConnell, C. O. Morrison, W. F. Noble, G. C. Noble, H. J. Philp, F. B. A. Punnett, A. W. Rowe, W. V. Ryan, G. V. Snell, T. H. Shield, P. M. Tidmarsh, G. J. C. Tigar, R. G. Trenholme, H. H. Thompson, P. MacL. Wallace, J. H. Jones, J. A. Mondor; May 16th. G. H. Knight; May 28th. B. T. Rampling; May 29th. L. G. Dennis; June 9th. B. F. Ross, E. E. Carpenter; June 10th. J. S. G. Holmes; June 11th. H. D. Butler, R. D. Brownlie; June 12th. S. F. B. Lea, W. England; June 14th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (A. and S.):—H. R. Dodd, P. S. Primrose, H. J. Heaton; May 15th. J. L. Warrington, A. H. Thomas, F. Kirk, P. E. Richardson, H. J. Collar, R. F. Sanders; June 14th. G. Prickett, W. W. Meddings, W. B. H. Shaw, W. D. Sambrook; June 19th. A. L. Mawer, W. S. T. Le May, L. Edwards, J. Mar en, C. E. Sherlock; June 21st.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (Dir.):—A. E. White, J. H. L. Kerby; June 19th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (K.B.):—H. W. Coverley, J. H. Peters, J. M. Dickinson, G. R. Gibbons, H. N. Davis, R. W. Paulger; June 24th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (K.B.):—A. Macdonald, L. H. Peach; June 24th.

D. S. Anderson (Prob. Flight Officer, late R.N.A.S.) is granted a temp. comm. as Sec. Lieut. (K.B.); May 11th.

The following are granted temp. comms. as Sec. Lieuts. (K.B.):—H. J. Sier (Sec. Lieut., R.F.A., S.R.); June 4th. E. Nordberg (Temp. Lieut., A.S.C.), and to be Hon. Lieut.; June 21st. O. H. Adams, M.C. (Sec. Lieut., R.G.A., S.R.); June 22nd. A. Farthing, Lieut., A. and S., to be Lieut., Observer Officer; June 22nd.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (Observer Officers):—J. Watson; June 11th. E. Singleton, J. Levy; June 16th. G. P. Collin, G. B. Nicholas, G. Harrison; June 17th. P. E. L. Foot, S. E. Rowley; June 18th. A. J. Viveash, C. W. Phillips, C. E. A. Lovell, G. E. Mann; June 19th. J. H. Jacques, A. Macinnes, R. H. Kemp, S. H. Smith; June 20th. R. W. Davidson; June 21st. M. A. Mackenzie, K. Penrose, R. Milne, C. W. C. Peene; June 22nd.

The following are granted temp. comms. as Sec. Lieuts. (Observer Officers):—W. W. L. Jenkin (Lieut., D. of Corn. L.I.), and to be Hon. Lieut.; June 16th. E. C. Harris (Temp. Sec. Lieut., K.R.R.C.); June 17th. F. W. P. Clark (Temp. Sec. Lieut., attd. Oxf. and Bucks L.I.), W. T. C. Blake (Sec. Lieut., Glouc. R., S.R.), E. M. Heron (Sec. Lieut., Lond. Yeo., T.F.), J. C. Montgomery (Temp. Lieut., Trg. Res. Bn.), and to be Hon. Lieut., E. F. Stephenson (Sec. Lieut., R.G.A., S.R.), P. K. Chapman (Temp. Sec. Lieut., Suff. R.), T. A. Nutcombe (Temp. Sec. Lieut., E. Lan. R.); June 19th. G. Ashtan (Sec. Lieut., W. Rid. R., T.F.), J. Fenwick (Lieut., Cam'n. Highrs., T.F.), and to be Hon. Lieut. C. J. Ralph (Sec. Lieut., New Armies, Gen. List); June 20th. E. Shampier (Lieut., Quebec R., C.E.F.), and to be Hon. Lieut., W. Taylor (Lieut., Gord. Highrs., T.F.), and to be Hon. Lieut.; June 21st. F. J. Jackson (Sec. Lieut.,

Lond. R., T.F.), B. H. Curry (Temp. Lieut., R.F.A.), and to be Hon. Lieut., A. J. Baxter (Sec. Lieut. Linc. R., T.F.), G. G. Cooper (Temp. Sec. Lieut., Suff. R.), E. W. Bell (Temp. Sec. Lieut., North's Fus.) W. Wallace (Sec. Lieut. R. W. Surr. R.), W. A. Carrothers (Capt., Manitoba R., C.E.F.), and to be Hon. Capt., W. A. John (Lieut., Sussex Yeo., T.F.), and to be Hon. Lieut., W. H. Binnie (Lieut., R. Scots, T.F.), and to be Hon. Lieut., G. V. Learmond (Temp. Sec. Lieut. High L.I.); June 22nd.

The following Prob. Observ. Offrs. (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (Observ. Offrs.):—W. A. Spranklin, F. J. Sutherland, L. T. Kerry, F. W. Elliott, A. E. E. Lee, G. P. Smith, H. M. Green, F. O. Bovill, J. G. Harvie, H. C. B. Freeman, V. M. Daniels, S. A. Banton, L. W. Aiken, R. C. Collinswood; June 24th.

The following Flt. Cadets are granted temp. commns. as Sec. Lieuts. (Observ. Officers):—G. K. Carruthers, F. J. Paget; May 18th. W. F. Keeping, G. L. Kaye; June 27th. L. M. Stubbley, D. P. Ogilvy, J. Houldgreaves, P. V. Kilby, F. Powell, M. St. J. Ross; June 29th.

The following Cadets are granted temp. commns. as Sec. Lieuts. (Observer Officers):—J. Ankers, L. H. F. Bird, E. R. Bull, W. T. Rutledge; June 20th. M. E. Brown, C. H. Wheeler, W. A. Armstrong, J. B. Whitehouse, R. N. Smith, P. T. Somerville, R. L. Williams, W. Grayson, P. Payne, D. C. Hay, G. N. G. Hamilton, S. J. Bailey; June 29th.

The name of Sec. Lieut. John Kelly (Observer Officer) is as now described, and not as in *Gazette*, June 18th.

The notification in *Gazette* June 25th regarding Flight Cdt. T. J. Leighs is cancelled.

Lieut. V. C. Gordon relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; July 6th.

Lieut. G. M. Murray relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; July 6th.

Sec. Lieut. W. Gardner relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lieut.; July 6th.

Administrative Branch.

Lieut. J. R. Frankish to be Temp. Capt. while employed as Capt.; June 20th. Sec. Lieut. A. W. Poat to be Temp. Lieut. while employed as Lieut.; June 20th. Lieuts. (O.) to be Lieuts.:—A. F. Britton, M.C.; June 4th. J. Dudley; June 13th.

Lieut. A. G. Baker to be Lieut. (from A. and S.); July 5th. F. A. Payne is granted a temp. commn. as Lieut.; July 1st.

The following are granted temp. commns. as Sec. Lieuts.:—R. E. Pudney; June 7th. J. H. Edgelow, H. G. Middleton, and to be Hon. Lieut.; July 1st. S. H. Adams, E. G. Burden, N. W. Chandler, E. L. Hopkins; July 5th.

Sec. Lieut. J. Pell, M.C. (from Technical) to be Sec. Lieut.; May 17th. Lieut. T. R. Whitehead relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; July 6th.

Sec. Lieut. C. G. Causton relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lieut.; July 6th.

Sec. Lieut. N. S. Roupell relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lieut.; July 6th.

Sec. Lieut. G. Dolley relinquishes his commn., and is granted the hon. rank of Sec. Lieut.; July 6th.

The following Sec. Lieuts. resign their commns., and are granted the hon. rank of Sec. Lieuts.:—H. Bayer, H. N. Dorling; July 6th.



American Bombing Machines Coming.

"THE first bombing aeroplane completely manufactured in America, equipped with the Liberty motor, has made its first official flight in the presence of officials of the British and American Governments," says the *Times* correspondent in New York, on July 7th. "Its success was complete. The trial flight was made by Col. the Master of Sempill, R.A.F., pilot, and Capt. Waller, R.A.F., observer, and other passengers were General Kenly, Chief of the Department of Military Aeronautics, Mr. Samuel P. Langley, and Mr. Dawkins, manager of the Handley-Page works, and a cinematographer for the Committee of Public Information. The aeroplane, named the Langley, in honour of Professor Langley, the father of modern aeronautics, left the ground beautifully, climbing in circles.

"The launching was preceded by a luncheon, at which Sir Henry Fowler, Deputy-Director of Aircraft Production in Great Britain, said:—

"I regard the completion of this aeroplane as an earnest of the work done in the United States to build up our ascendancy in the air. We are going to have an overwhelming superiority in the air, and the one thing that will win it is the finest aeronautical machine ever built—the Liberty motor. No engine was ever more truly named."

"Mr. John D. Ryan, Director of Aircraft Production in the United States, said:—

"Behind this plane are thousands of others already under way. They were produced by an American workshop, which during May and June last produced as many Liberty motors as Great Britain produced engines during the entire year 1915, at the close of which England had been 17 months at war. Including other types of aircraft engines more motors were produced in our shops in June alone than Great Britain produced during the whole year 1915, and this is not said in disparagement of Great Britain. Facilities for the manufacture of aircraft engines and aeroplanes are now being developed with all speed. America has entered a production stage which means quantity production. Our country and its Allies will soon realise the benefit of such a fighting air force as will satisfy our people and our Allies and bring consternation to our enemies."

Good Work by American Pilots.

"It is believed that five more German aeroplanes were driven down by American airmen on the afternoon of July 2nd, making a total of eight or nine for the day, at the cost of the loss of two men and machines," says a *Times* correspondent with the American Army.

Technical Branch.

F. N. Newell-Roberts (A. Lieut., R.N.V.R.) is granted a temp. commn. as Capt.; April 1st. (Substituted for notification in *Gazette*, June 4th.)

The following Lieuts. (Temp. Capt.) retain their temp. rank while employed as Capt. (from A. and S.):—W. E. L. Seward, M.C.; April 25th. A. Lang; June 25th.

Lieut. D. E. Barnett to be Temp. Capt. while employed as Capt.; June 26th.

Capt. A. H. Binyon to be Capt. (from Admin.); June 22nd.

Sec. Lieut. P. L. Lindup to be Temp. Lieut. while employed as Lieut.; May 23rd.

Flight Cadet R. E. Lane is granted a temp. commn. as Sec. Lieut.; April 1st. H. S. Fielding (late Sec. Lieut., R.F.C., on prob.) is granted a temp. commn. as Sec. Lieut.; May 27th.

The following relinquish their commns. on ceasing to be employed:—Lieut. (Temp. Capt.) A. L. Howarth; April 21st. Sec. Lieut. (Hon. Capt.) A. H. Woodhead (Capt., Ches. R.); May 26th.

Medical Branch.

The following Fleet Surgeons, R.N., are granted temp. commns. as Lieut.-Cols.:—R. H. Mornement, W. H. Pope, N. J. Roche, J. St. J. Murphy; June 22nd.

H. Cooper, D.S.O. (Staff Surgn., R.N.), is granted a temp. commn. as Lieut.-Col.; June 22nd.

A. E. Henton is granted a temp. commn. as Capt.; July 5th.

Memoranda.—Maj. (Temp. Lieut.-Col.) R. K. Bagnall-Wild to be Temp. Brig.-Gen.; July 6th.

Maj. H. C. Ellis is granted the temp. rank of Col. while holding the appointment of Gen. Servs. Pay Offr.; June 17th.

Capt. (Temp. Maj.) S. H. B. Harris to be Lieut.-Col. while spec. employed; June 26th.

The following relinquish their commns. on ceasing to be employed:—Maj. A. P. Frankland, D.S.O. (Res. of Off.); June 5th. Sec. Lieut. J. S. R. Morgan; June 13th. Sec. Lieut. W. Colman; June 19th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, July 1st.

The following appointments are made:—

Balloon Officers.—Lieut. G. P. Robinson, Midd'x R. (T.F.), and to be sec'd.; Temp. Capt. B. E. C. E. Jameson, Gen. List; Lieut. F. D. Levy, Lond. R. (T.F.), and to be sec'd.; Lieut. G. H. H. Box, S. Staff. R., S.R., and to be sec'd. Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—S. C. Lockwood, T. H. Noble; March 15th.

Equipment Officer, 2nd Class.—Lieut. W. Birtwistle, S.R., from the 3rd Class; Feb. 20th.

London Gazette Supplement, July 2nd.

The following appointments are made:—

Equipment Officers. 1st Class.—Temp. Lieut. (Temp. Capt.) J. Durward, Gen. List, from the 2nd Cl., and to retain his temp. rank while so employed; Feb. 3rd.

2nd Class.—From the 3rd Cl.—Lieut. G. J. Williams, S.R., Sec. Lieut. W. G. Stafford, M.C., D.C.M., and to be Temp. Lieut. while so employed; Feb. 1st. Temp. Lieut. B. Humphrey, Suff. R., and to be transfd. to R.F.C., Gen. List March 29th.

"Eight machines were flying in the Chateau-Thierry sector, when they saw a German patrol of 12. The Americans, who were 15 miles behind the German lines, attacked. The Germans dived, but the Americans went on, and one enemy machine after another was seen to fall. When the Germans broke off the action an American pilot chased them a considerable distance. He was attacked by two of the enemy, but, by skilful manoeuvring, escaped, and with his petrol all gone landed in his own lines. Another airman dived at four of the enemy and shot one down."

Two More Aeroplanes from South Africa.

In the presence of a large gathering, Mr. Henry Burton, one of the Union of South Africa representatives in the War Cabinet, handed over to the Royal Air Force at Brooklands on Saturday two high powered scouting machines—one from the Benoni Branch of the Overseas Club and the other from Mr. Walter Greenacre of Durban in recognition of the splendid services of the South African aviators. In accepting the machines Major Baird, Parliamentary Secretary to the Air Ministry, said that at present there were upwards of 3,000 South Africans in the R.A.F., and they had rendered valuable services first in German S.W. Africa, then in East Africa and also on the Western Front. The aeroplanes which he now accepted possessed unique features and there was no doubt they would give a good account of themselves, whether flown by South Africans or by any other Britons. Built in Great Britain, presented by South Africans, they were being started on their career by an Australian and a Canadian pilot—a truly representative combination of the British Empire.

Sir Ernest Birch, as representing the Over-Seas Club and Patriotic League, mentioned that that institution had been instrumental up to date in presenting to the Royal Air Force 165 aeroplanes and seaplanes from the Oversea Dominions. Among those present were Lieut.-Col. J. M. Bonham Carter, Lieut.-Col. R. W. Roylance, Major Peer Groves, Major J. Stewart, Lieut. R. F. Deane, Mr. W. A. Bulkeley Evans, Sir Ernest Birch, Sir John Taverner, Sir Charles J. Tarring, Sir Edward Rosling, Mr. Algernon E. Aspinall, Mr. Alexander Finn, Mr. Reginald Phillips, Mr. Humphrey Davy, Mr. C. F. Truefitt, and Mr. Francis R. Jones.

Two Swedish Aviators Lost.

Two Swedish aviators, Capt. Kenokstedt and Baron Cederstroem—one of the pioneers of aviation—who started out last week on a flight over the Baltic in a seaplane built for Finland by the Swedish Aviation Co., have not returned. The discovery of wreckage near the Aaland Islands has given rise to the belief that they have perished.

Austro-Hungarian Aerial Mails.

FROM a message received by the *Kölnische Zeitung* from Budapest, it would appear that the military aerial post between Budapest and Vienna, referred to in our last issue, was actually started on Friday, July 5th. The postal rate for letters to Vienna is 5 kronen 10 heller. A second aerial postal service between Budapest-Bukarest-Odessa is shortly to be inaugurated.

German Socialists Object to Air Raids.

THAT the persistent bombing of German towns is not without effect is shown by the wail sent up by Herr Scheidemann, the Majority Socialist leader. Speaking in the Reichstag on July 3rd, he said:—

"There is nothing more horrible than air attacks on open towns outside the war zone. The enemy airmen, however, have not succeeded in destroying the munition camps or in damaging the railway junctions in our country.

"Whether our airmen have succeeded in causing considerable military damage I do not know; but I do know that, by means of air attacks, many hundreds of innocent women, girls, and children have been killed and mutilated. The reporting of air attacks is mostly forbidden in this country. You therefore do not learn of the women and children who are constantly being killed in Southern Germany."

Herr Scheidemann went on to refer to a recent attack on Mannheim, and said it was only by chance that bombs did not fall in the market place and cause hundreds of victims.

German Machines in Denmark.

A COPENHAGEN message states that on the night of July 2nd a German aeroplane was wrecked off the west coast of Jutland. A Danish lifeboat went out to save the occupants but without result. A large German seaplane was wrecked on July 4th near the northern coast of Laaland Island, Denmark. The three occupants, who were rescued by Danish seamen, will probably be interned. Another message says that three more German aviators, who landed near Vordingborg in Denmark on July 5th, are to be interned at Odense; the German Embassy offered them petrol for their seaplane which it is said was not damaged and will be stored in the Copenhagen naval yard. The three men are thought to have deserted from Germany, they were in civilian dress.

UNAFFILIATED MODEL CLUBS DIARY AND REPORTS.

Club reports of chief work done are published monthly. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Finbury Park and District Aero Club (30, HANLEY ROAD, HORNSEY ROAD, N. Flying grounds, Parliament Hill.)

Monthly Report.—During the past month the members have been out flying on four occasions. The most interesting flights on June 1st were made by Mr. Jackson, with a 12-oz. Morane parasol, making flights of 35 seconds. Mr. Coleman was flying a small biplane, which, after making some good flights, he had the misfortune to lose. Mr. Burchell had out a neat little monoplane weighing 3 ozs., which climbed to a great height, making some splendid glides. The model flown by Mr. Richards was rather larger than Mr. Burchell's, with more or less flat plane, but some good flights were made at a fair height. On the 8th Mr. Jackson's model, with a slightly larger screw, showed better results, on one occasion making a duration of 40 seconds. Its average flight is about 250 yards, with a duration of 35 to 40 seconds. Messrs. Burchell and Richard were busy, and Mr. Poultny was testing a new model of the single-pusher variety, making one or two fairly good flights. Mr. Jackson was out again on the 24th, having made a slight alteration to the tail, which seemed to increase the speed. The model landed in the trees two or three times, but was recovered without damage. Mr. Coleman was acting as mechanic. On the 29th five members turned out. Mr. Burchell was flying a new machine, and after one or two good flights had the great misfortune to lose it over the house-tops. Another scale model was brought out by Mr. Jackson after the style of the old Deperdussin monoplane. This model proved to be very fast and would climb well, making flight of about 35 seconds, as the rubber motor is only 16 ins. long. Mr. Richards was also flying, making some fine flights until he broke his plane. Master Blundell, who was flying a small 2-oz. model, was making some very high flights, rising in circles and ending in long flat glides. An inter-club contest is being arranged with the Grahame-White Model Aero Club. Several members are turning their attention to scale models, and the Secretary will be glad to hear from anyone interested.

The Grahame-White Model Aeroplane Club.

DURING the first week of last month flying was not greatly in evidence, members being engaged in completing various machines. The competition has, unfortunately, had to be postponed. Following is a brief description of the machines which have appeared during the month: Mr. F. Coombs, twin tractor biplane and twin pusher monoplane; Mr. F. C. Beverly, large H.L. tractor and small tractor; Mr. P. J. Poultny, tractor biplane; Mr. C. Sergeant, twin pusher; Mr. L. E. Mottrem, twin pusher, double surface, 5 ft. span, approximate model of Sopwith "Camel." The first was an entirely new venture as regards construction and design. The main plane had an ash leading and trailing edge with folded sheet aluminium ribs, which withstood admirably the rather severe usage to which it was subjected. Another feature of interest was the arrangement of the propellers. These were mounted vertically instead of horizontally. This machine was rather unstable longitudinally, owing probably to the arrangement of the propellers. The last is up till now the best example of workmanship that has yet appeared. The wooden parts of this biplane were ash throughout. A quick-release type of independent motor rod entirely overcame the usual difficulty of fixing and adjusting the rubber on covered-in fuselage machines. The chassis and tail skid were very neatly sprung. This machine, though weighing some 11 ozs., made a straight flight of about 120 yards. Military requirements having forced us to abandon our former fine flying ground, we have had to revert to the "school" drome. Mr. L. A. Duke, having returned after a serious illness, has kindly consented to act as chairman.

COMPANY MATTERS.

Whitehead Aircraft (1917), Ltd.

A DIVIDEND at rate of 7 per cent. per annum (free of tax up to 5s. in £1) has been declared on preference shares for half-year ended March 31st.

NEW COMPANIES REGISTERED.

CELLON (MIDLANDS), LTD., 22, Cork Street, W. 1.—Capital £50,000, in £1 shares (10,000 7½ per cent. participating cumulative preference). Acquiring part of the business carried on by Thomas Tyrer and Co., Ltd., at Stratford, E., and at Cellon Works, Richmond, as manufacturers of aeroplanes, dope and varnishes for Cellon, Ltd., and part of the business of Cellon, Ltd., relating to the sale of the dope and varnishes so manufactured. First directors: A. J. A. W. Barr, R. E. P. Grosscurth, and P. H. Chambers.

CLIFFORDS, LTD.—Capital £2,000, in £1 shares. Merchants and factors of aircraft, wireless installation, &c. Permanent managing director: Clifford W. Edwards, Peterborough.

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PUBLICATIONS RECEIVED.

Pocket Dictionary of Technical Terms used in Wireless Telegraphy. By Harold Ward. London: The Wireless Press, Ltd. Price, 2s. net.

From War to Work. By Samuel Turner. London: Nisbet and Co., Ltd., 22, Berners Street, W. 1. Price 1s. 6d. net.

Aeronautical Patents Published.

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

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